IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

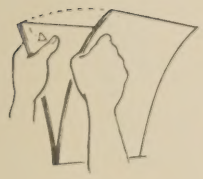
This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

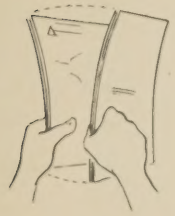
DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

TO OPEN ***JUST DO THIS:***



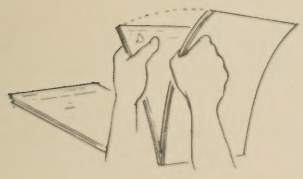
1

Bend up the ends of the wire-seals using a screwdriver or similar instrument. Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top.



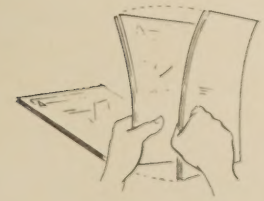
2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.



3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.



4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

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PHOTOFACT* Folder

AIR KING MODEL
2017R

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

AIR KING MODEL
2017R

HOWARD W. SAMS & CO., INC. • Indianapolis, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1950 by Howard W. Sams & Co., Inc., Indianapolis, Indiana, U.S.A. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc."
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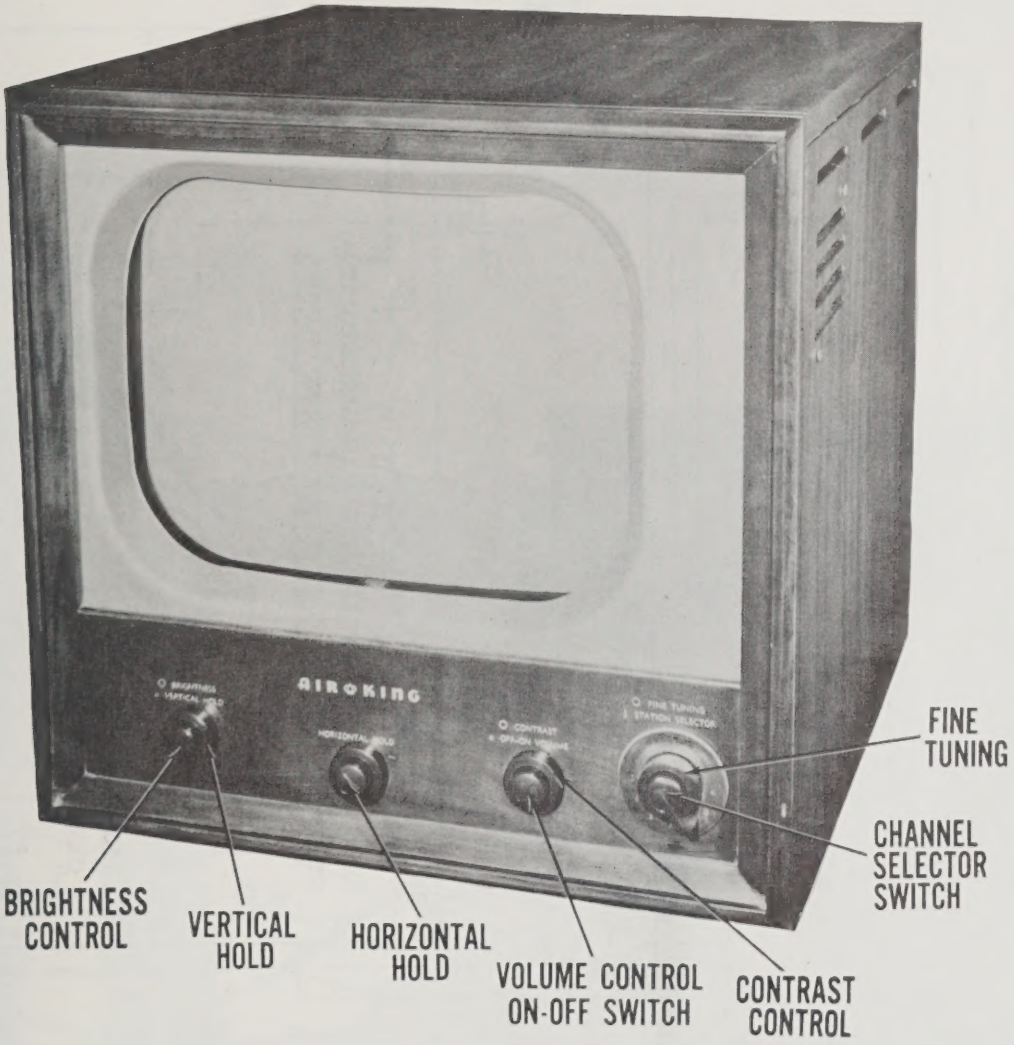
10 9 8 7 6 5 4 3 2 1

Date 11/50 Set No. 111—Folder No. 2



AIR KING
MODEL 2017R

AIR KING MODEL 2017R

TRADE NAME	Air King, Model 2017R
MANUFACTURER	Air King Products Co., 170 53rd St., Brooklyn, New York
TYPE SET	Television Receiver
TUBES	Twenty
POWER SUPPLY	110-120 Volts AC-60 Cycle
TUNING RANGE—	Channels 2 thru 13
RATING	1.9 Amp. at 117 Volts AC

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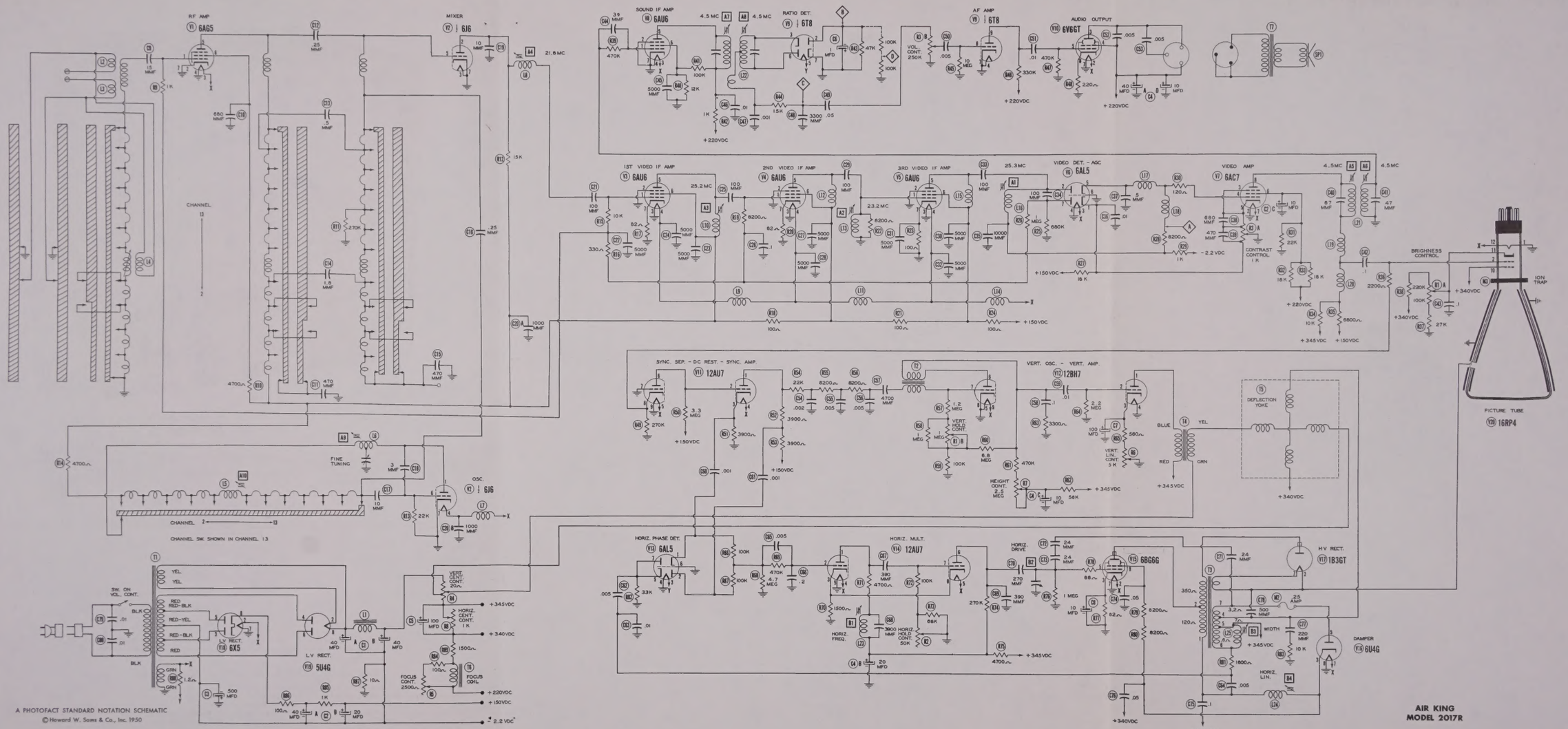
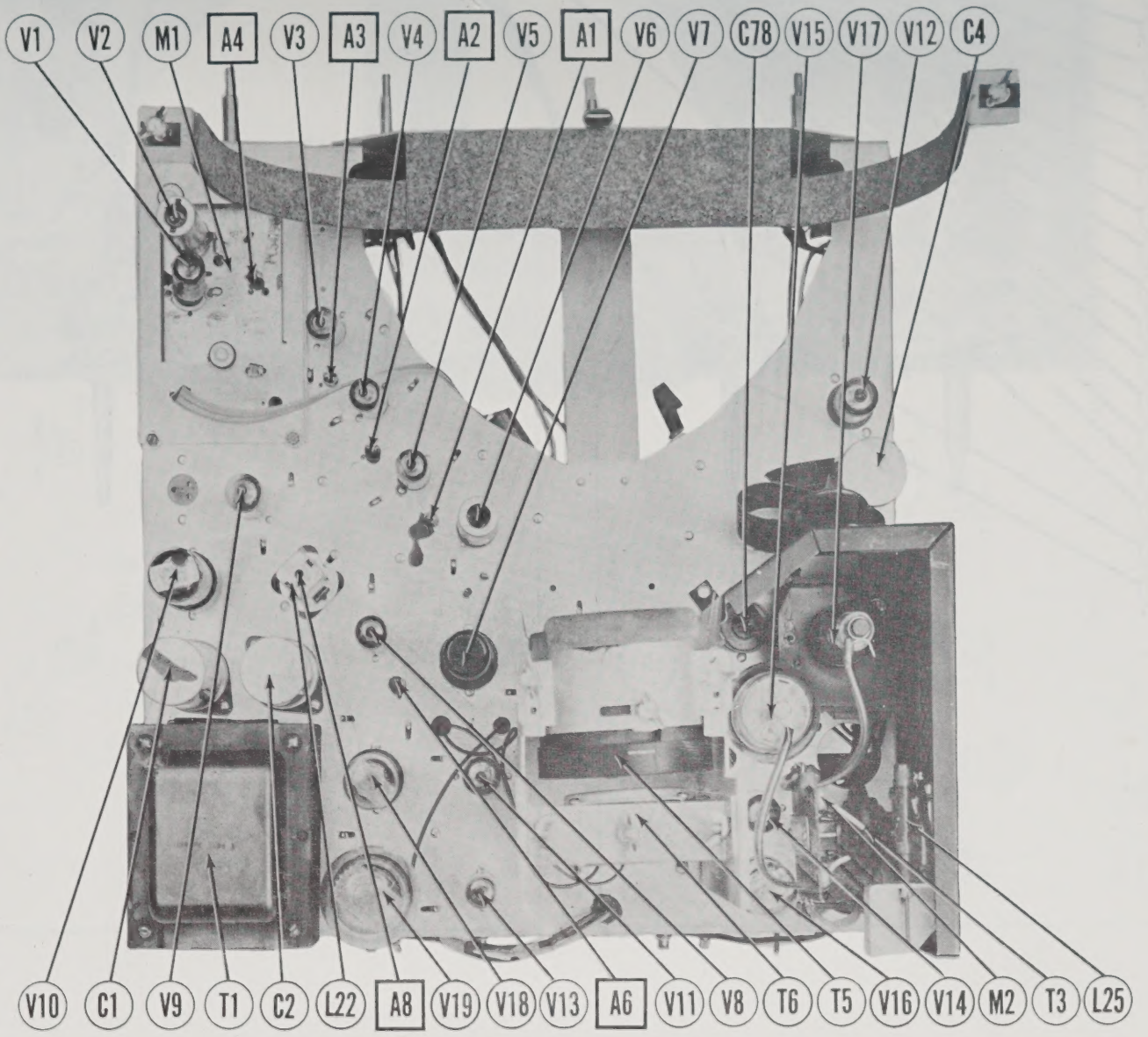
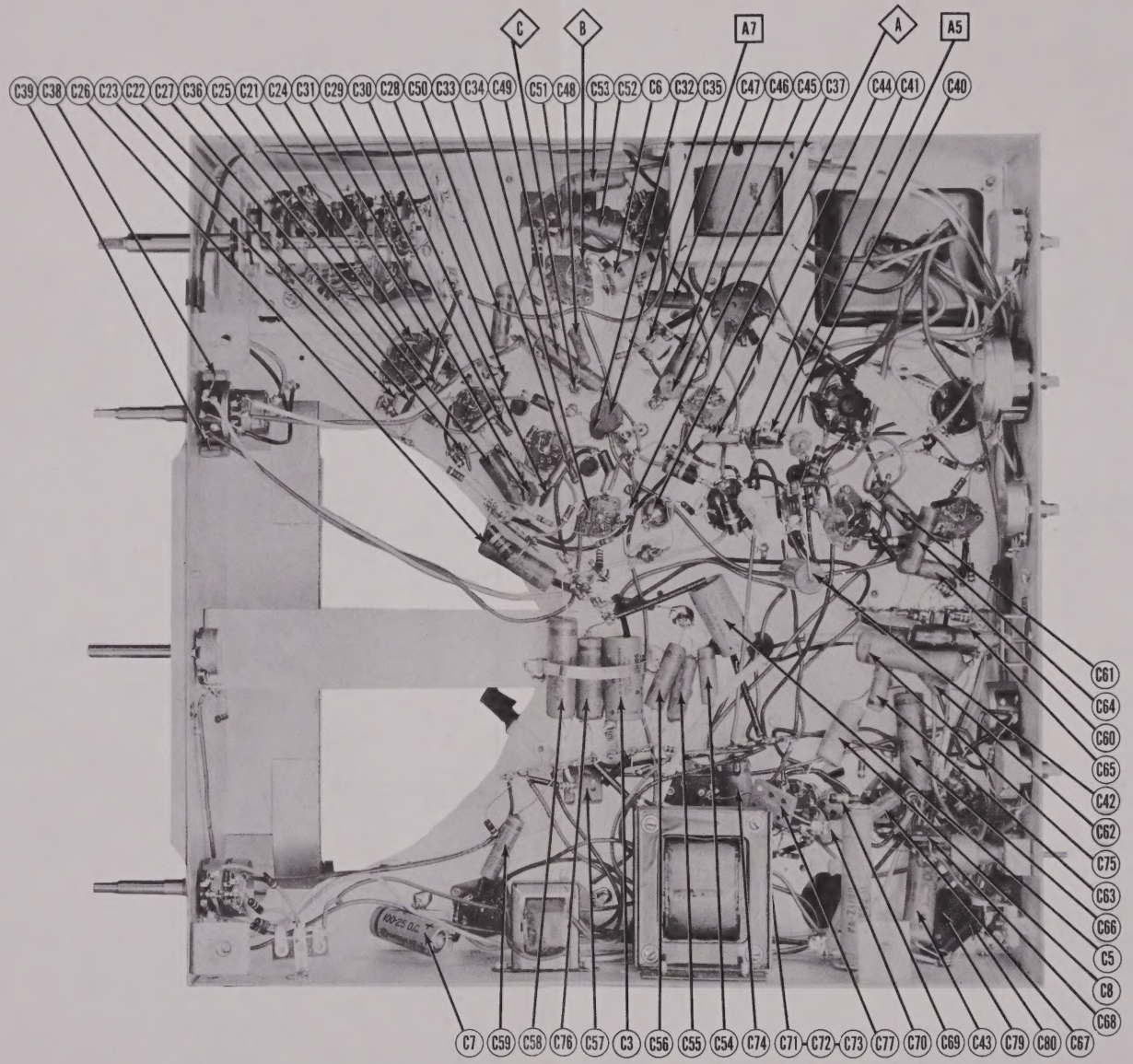


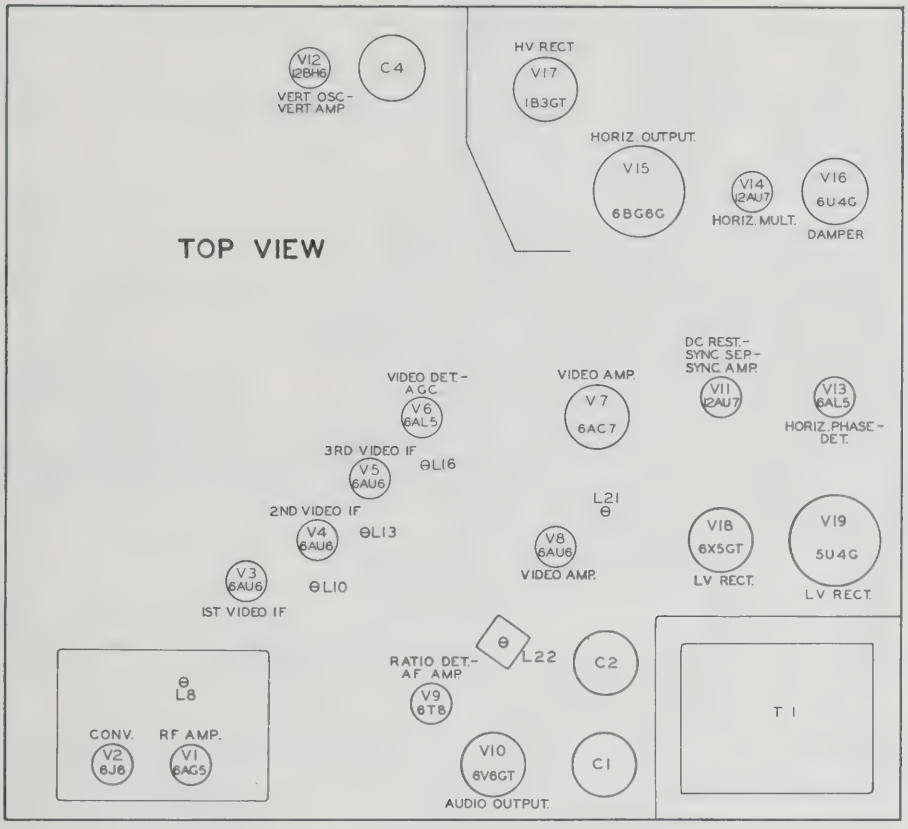
AIR KING
MODEL 2017R

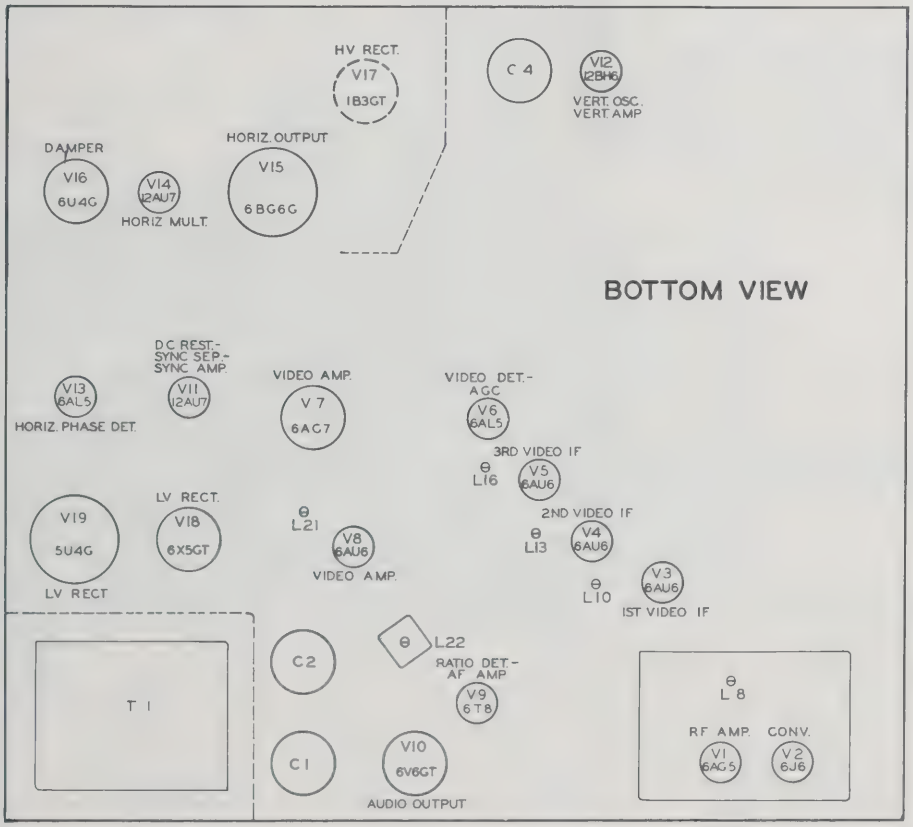


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To eliminate the high voltage shock hazard remove the horizontal output tube (V15) from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 with pin 1 removed to prevent erroneous indications.
Connect the negative terminal of a 3 volt battery to the junction of R16 and C26 and the positive terminal to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter (V2). Low side to chassis.	25.3MC (Unmod.)	Any	DC Probe to Point (A). Common to chassis.	A1	Adjust for maximum deflection.
2.	Direct	"	23.2MC	"	"	A2	"
3.	Direct	"	25.2MC	"	"	A3	"
4.	Direct	"	21.8MC	"	"	A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24MC (10MC SWP)	21.75MC 22.5MC 25.75MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to figure 1. The 22.5MC and 25.75MC markers should be at 50% response. If necessary, SLIGHTLY retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point C to chassis. The junction of these resistors is alignment point D as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.001MFD	High side to pin 4 (Grid) of 6AC7 (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (B). Common to chassis.	A5, A6, A7	Adjust for maximum deflection.
7.	.001MFD	"	"	"	DC Probe to Point (C). Common to Point (D).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.001MFD	High side to pin 4 (Grid) of 6AC7 (V7). Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	Any	Vert. Amp. to Point (B). Low side to chassis.	A5, A6, A7	Disconnect stabilizer capacitor C6. Adjust for maximum amplitude and symmetry as per figure 2.
7.	.001MFD	"	"	"	"	Vert. Amp. to Point (C). Low side to chassis.	A8	Reconnect capacitor C6. Adjust A8 to place 4.5MC at center of crossover lines as per figure 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect a 3 volt battery as in Video IF Alignment.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A9	Adjust to place sound marker as shown in figure 4. The video marker should be at 50% response.
9.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check all high band channels to see if sound marker can be placed well within the range of the fine tuning control. If not, a compromise adjustment of A9 will be necessary.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
10.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	"	A10	Adjust to place sound marker as shown in figure 4. The video marker should be at 50%.
11.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5	"		Check all low band channels to see if sound marker can be placed well within the range of the fine tuning control. If not, a compromise adjustment of A10 will be necessary.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

THE RF PORTION OF THIS RECEIVER HAS BEEN PRE-SET AT THE FACTORY AND IS VERY STABLE AND SHOULD NOT REQUIRE ADJUSTMENT IN THE FIELD.

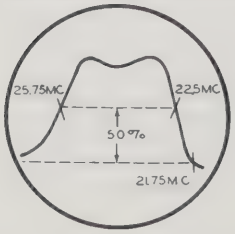


FIG.1

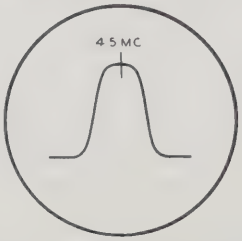


FIG. 2

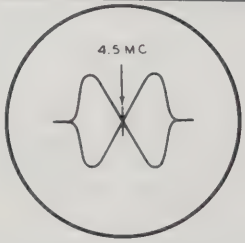


FIG. 3

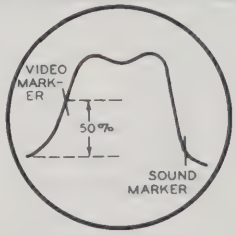
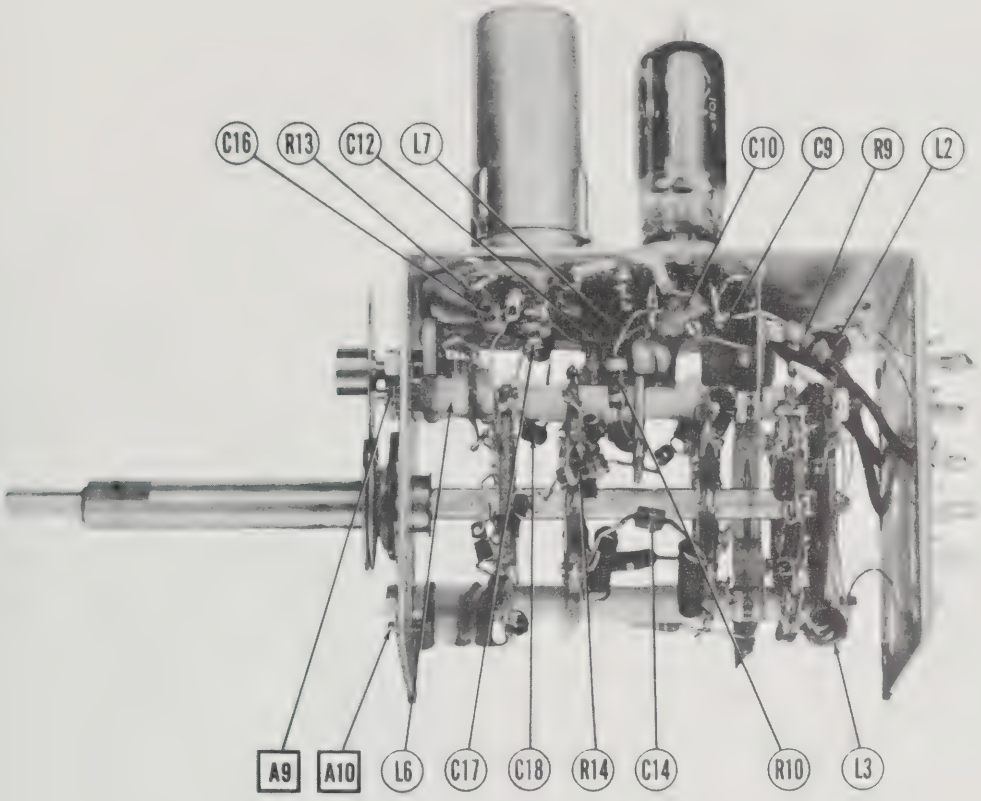
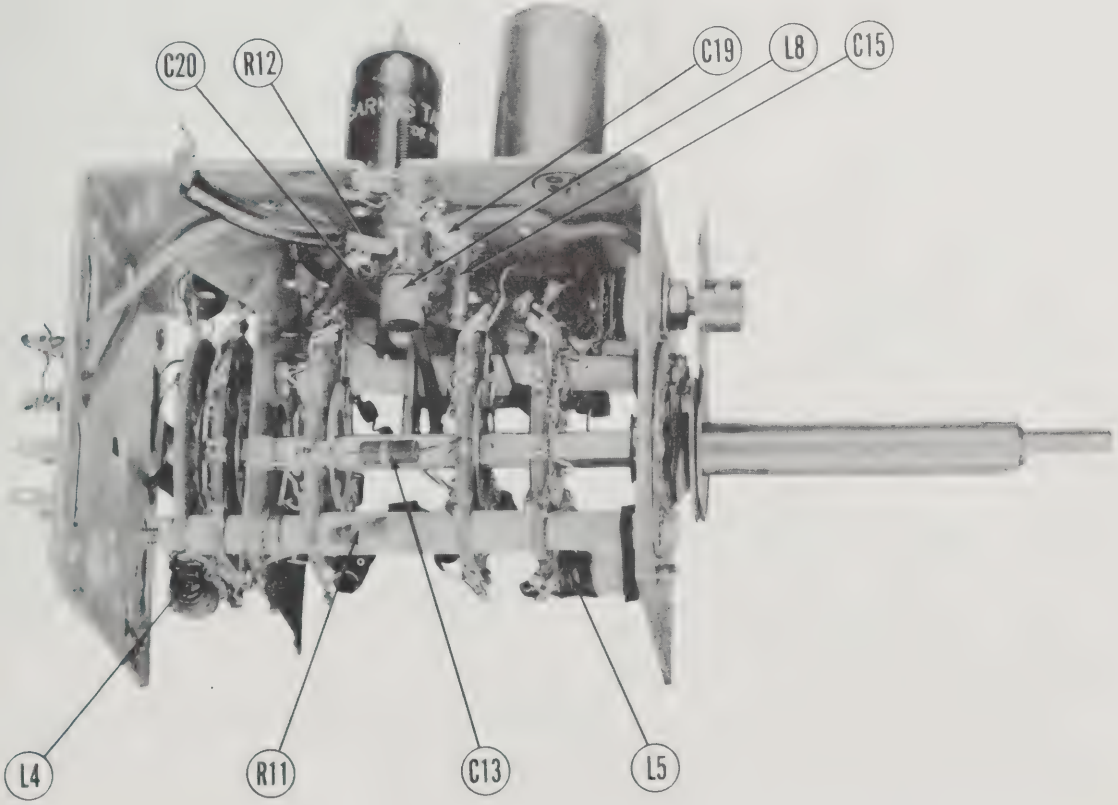


FIG.4



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.6VDC	0V.	6.3VAC	0V.	130VDC	115VDC	0V.		
V 2	6J6	90VDC	75VDC	0V.	6.3VAC	-1VDC	§-5.4VDC	0V.		
V 3	6AU6	-.4VDC	0V.	0V.	6.3VAC	125VDC	135VDC	.4VDC		
V 4	6AU6	-.4VDC	0V.	0V.	6.3VAC	130VDC	140VDC	.4VDC		
V 5	6AU6	0V.	0V.	0V.	6.3VAC	133VDC	143VDC	1.2VDC		
V 6	6AL5	0V.	-2.2VDC	6.3VAC	0V.	-1.2VDC	0V.	-.5VDC		
V 7	6AC7	0V.	0V.	2.4VDC	-1.3VDC	2.4VDC	145VDC	6.3VAC	220VDC	
V 8	6AU6	-.5VDC	0V.	6.3VAC	0V.	220VDC	23VDC	0V.		
V 9	6T8	0V.	-.6VDC	-.3VDC	0V.	5.4VAC	-.3VDC	0V.	-.4VDC	75VDC
V 10	6V6GT	0V.	6.3VAC	205VDC	220VDC	0V.	220VDC	0V.	10VDC	
V 11	12AU7	100VDC	23VDC	26VDC	6.3VAC	6.3VAC	23VDC	0V.	2.8VDC	0V.
V 12	12BH7	320VDC	0V.	11VDC 20VDC	0V.	0V.	145VDC 30VDC	-27VDC	0V.	6.3VAC
V 13	6AL5	10VDC	-10VDC	5.4VAC	0V.	0V.	0V.	0V.		
V 14	12AU7	275VDC	-.1VDC	11VDC	6.3VAC	6.3VAC	110VDC	-4VDC	11VDC	0V.
V 15	6BG6G	0V.	6.3VAC	9VDC	-1.4VDC	-2.4VDC	-2.4VDC	0V.	275VDC	TOP CAP *
V 16	6U4G	320VDC	500VDC	500VDC	115VDC	350VDC	500VDC	6.3VAC	0V.	
V 17	1B3GT	* DO NOT MEASURE.								
V 18	6X5GT	0V.	6.3VAC	175VAC	150VDC	175VAC	350VDC	0V.	195VDC	
V 19	5U4G	0V.	380VDC	0V.	370VAC	0V.	370VAC	0V.	380VDC	
V 20	16RP4	0V.	2.6VDC	PIN 10 340VDC	PIN 11 115VDC	PIN 12 6.3VAC				

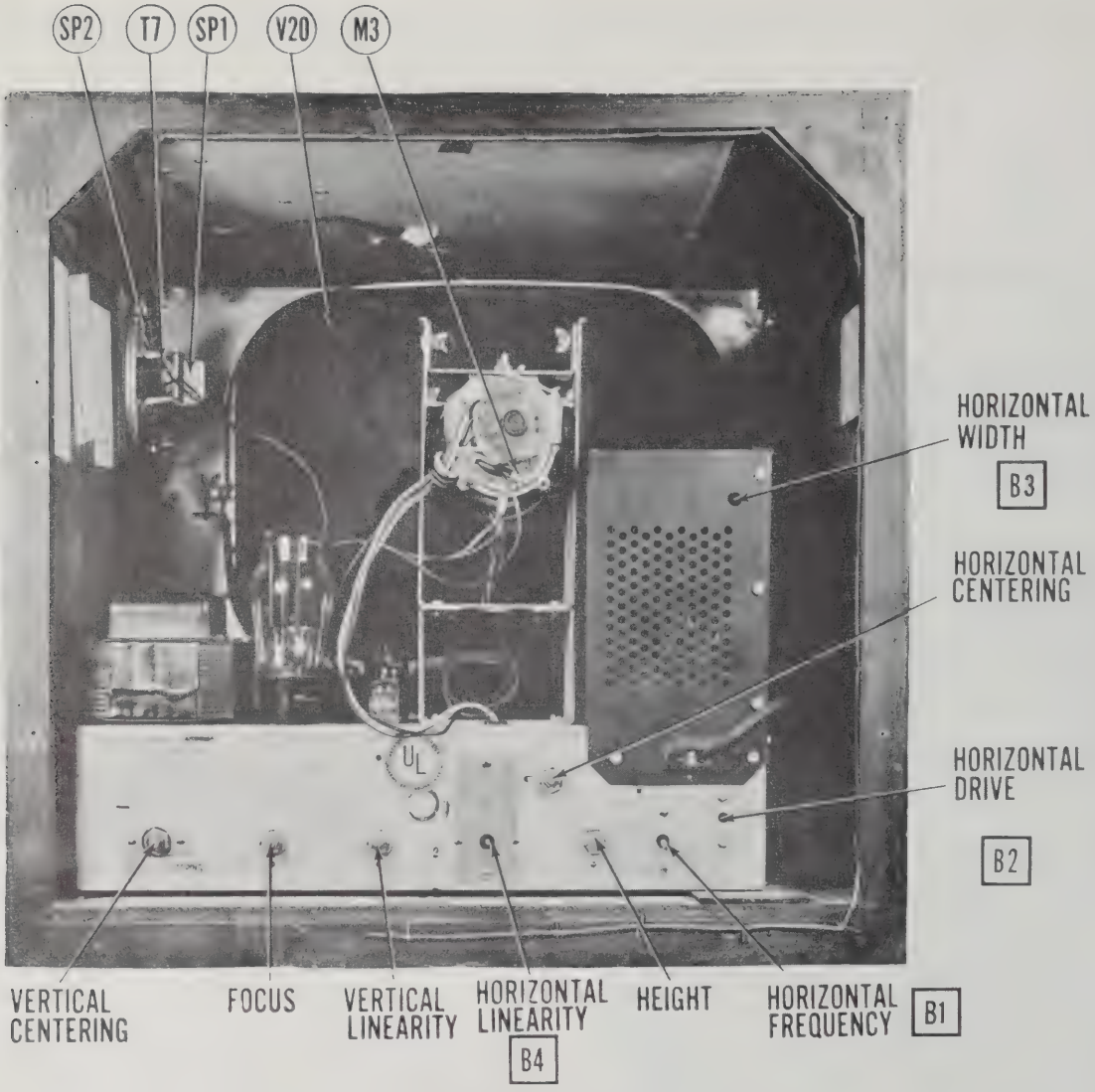
FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	1.7 Meg.	0Ω	.1Ω	0Ω	#1.4KΩ	#6KΩ	0Ω		
V 2	6J6	#6KΩ	#16KΩ	0Ω	.2Ω	270KΩ	22KΩ	0Ω		
V 3	6AU6	1.7 Meg.	0Ω	0Ω	.1Ω	#1.4KΩ	#1.4KΩ	82Ω		
V 4	6AU6	1.7 Meg.	0Ω	0Ω	.1Ω	#1.3KΩ	#1.3KΩ	82Ω		
V 5	6AU6	.3Ω	0Ω	0Ω	.1Ω	#1.2KΩ	#1.2KΩ	100Ω		
V 6	6AL5	0Ω	1000Ω	.1Ω	0Ω	9.2KΩ	0Ω	680KΩ		
V 7	6AC7	0Ω	0Ω	1000Ω	9.3KΩ	1000Ω	†10KΩ	.1Ω	†10KΩ	
V 8	6AU6	470KΩ	0Ω	.1Ω	0Ω	†3.8KΩ	†22KΩ	0Ω		
V 9	6T8	0Ω	47KΩ	Inf.	0Ω	.1Ω	Inf.	0Ω	10 Meg.	†330KΩ
V 10	6V6GT	Inf.	.1Ω	†3KΩ	†2.7KΩ	470KΩ	†2.7KΩ	0Ω	220Ω	
V 11	12AU7	#8.9KΩ	#3.3 Meg.	3.9KΩ	.1Ω	.1Ω	#3.3 Meg.	0Ω	270KΩ	0Ω
V 12	12BH7	†700Ω	2.2 Meg.	5KΩ 560Ω	0Ω	0Ω	†500KΩ †2.2 Meg.	1.8 Meg.	0Ω	.1Ω
V 13	6AL5	4.8 Meg.	4.8 Meg.	.7Ω	0Ω	33KΩ	0Ω	33KΩ		
V 14	12AU7	†10KΩ	5 Meg.	1.5KΩ	.1Ω	.1Ω	†275KΩ	150KΩ	1.5KΩ	0Ω
V 15	6BG6G	Inf.	.1Ω	82Ω	30KΩ	1 Meg.	1 Meg.	0Ω	▲16KΩ	TOP CAP ▲150Ω
V 16	6U4G	▲30Ω	†5KΩ	Inf.	60KΩ	†160Ω	▲0Ω	.1Ω	0Ω	
V 17	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲500Ω
V 18	6X5GT	Inf.	.1Ω	25Ω	#1.1KΩ	25Ω	†15KΩ	0Ω	14KΩ	
V 19	5U4G	Inf.	14KΩ	Inf.	40Ω	Inf.	40Ω	Inf.	14KΩ	
V 20	16RP4	0Ω	270KΩ	PIN 10 †160Ω	PIN 11 60KΩ	PIN 12 .1Ω				

FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
MEASURED FROM PIN 8 OF V18.
† MEASURED FROM PIN 2 OF V19.
▲ MEASURED FROM PIN 3 OF V16.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station preferably a test pattern.

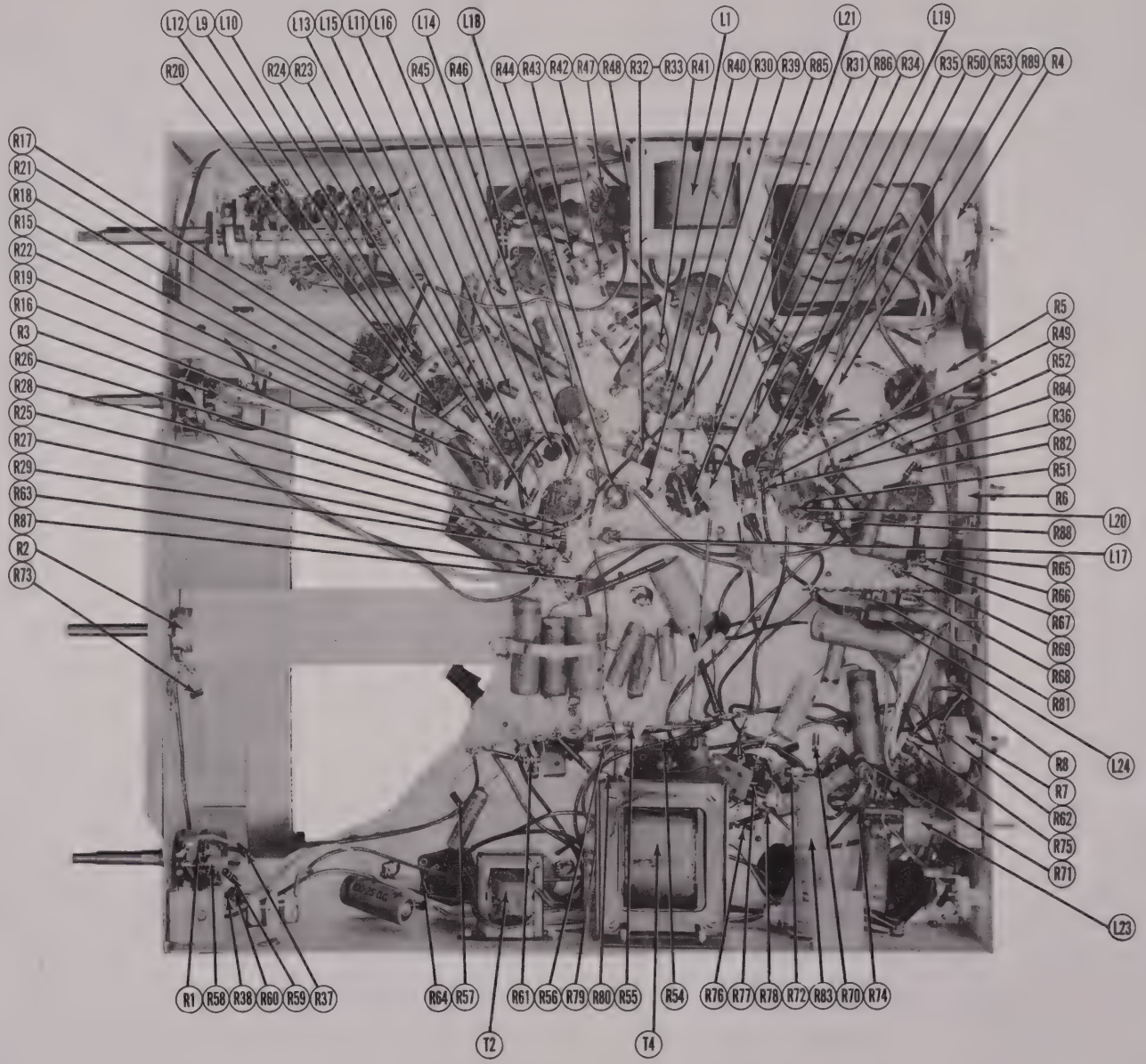
Turn the horizontal hold control to the mid-position of its range and adjust the horizontal frequency slug (B1) until picture synchronizes horizontally.

Turn the horizontal drive trimmer (B2) clockwise as far as possible without crowding the right side of the picture. Adjust the width slug (B3) until the picture fills the mask horizontally. Adjust the horizontal linearity slug (B4) for best linearity from left to right. A slight readjustment of B2 may be necessary for optimum results.

DISASSEMBLY INSTRUCTIONS

1. Remove eight push-on type control knobs.
2. Remove six wood screws from rear cover.
3. Disconnect built-in antenna.
4. Remove speaker leads.
5. Remove interlock switching arrangement.
6. Remove four 7/16" hex head bolts from bottom of chassis. Remove chassis.
7. Remove two 5/16" hex nuts holding speaker to cabinet. Remove speaker.

FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO FOLLOW PROCEDURE OUTLINED ABOVE.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIR KING PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6AU6	6AU6	7BK	
V4	2nd Video IF	6AU6	6AU6	7BK	
V5	3rd Video IF	6AU6	6AU6	7BK	
V6	Video Det.-AGC	6AL5	6AL5	6BT	
V7	Video Amp.	6AC7	6AC7	8N	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Det.-AF Amp.	6T8	6T8	9E	
V10	Audio Output	6V6GT	6V6GT	7AC	
V11	Sync. Sep.-DC Rest.-Sync. Amp.	12AU7	12AU7	9A	
V12	Vert. Osc.-Vert. Amp.	12BH7	12BH7	9A	
V13	Hor. Phase Det.	6AL5	6AL5	6BT	
V14	Hor. Mult.	12AU7	12AU7	9A	
V15	Hor. Output	6BG6G	6BG6G	5BT	
V16	Damper	6U4G	6U4G	4CG	
V17	HV Rect.	1B3GT	1B3GT	3C	
V18	LV Rect.	6X5	6X5	6S	
V19	LV Rect.	5U4G	5U4G	5T	
V20	Picture Tube	16RP4	16RP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR KING PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450		AFH88J		UPT4445		TVL-2764	▲ Filter
B	40	450							▲ Filter
C2A	40	250		AFH84F2D		UPT42125		TVL-3517	■ Filter
B	20	250							■ Filter
C	10	150							▲ V. Amp. Screen
C3	500	6		PR36/500		BRH605A		TVA-1103	Bias Filter
C4A	40	450		AFH84Z2J		UPT421145		TVL-4840	▲ Filter
B	20	450							■ Decoupling
C	10	450							▲ Vert. Osc. Dec. Filter
D	10	450							
C5	100	12		PRS25/100		BRH121		TVA-1130	Hor. Cent. Cont. Byp.
C6	1	25		PRS150/4		BBR1-50		TVA-1201	Stabilizing Cap.
C7	100	25		PRS25/100		BRH251A		TVA-1207	Vert. Output Cath.
C8	10	25		PRS25/10		BR102A		TVA-1204	Hor. Output Cath.
C9	15			SII5	D6-150		GP1K-15	19C22	RF Coupling
C10	680			SI680	D6-681		GP2K-680	19C17	RF Decoupling
C11	470			SI470	D6-471		GP2K-470	19C15	RF Decoupling
C12	25								RF Coupling
C13	.5				TCZ-.5				RF Coupling
C14	1 8								RF Coupling
C15	470			SI470	D6-471		GP2K-470	19C15	Mixer Grid Filter
C16	25								Osc. Coupling
C17	10			SI10NPO	TCZ-10		NPOK-10	19C3	Osc. Grid Cap.
C18	3			SI3NPO			NPOK-3		Osc. Feedback
C19	10			SI10NPO	TCZ-10		NPOK-10	19C3	Fixed Trimmer
C20A	1000			BPD-2 x 001	DD-2-102		882-2 x 0015	29C7	RF Bypass
B	1000								Conv. Fil. Bypass
C21	100			SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C22	5000			BPD-005	DD-502	1D5D5	811-005	29C1	AGC Filter
C23	5000			BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Dec.
C24	5000			BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Fil.
C25	100			SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C26	1	200		P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C27	5000			BPD-005	DD-502	1D5D5	811-005	29C1	2nd V. IF Dec.
C28	5000			BPD-005	DD-502	1D5D5	811-005	29C1	2nd V. IF Fil.
C29	100			SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C30	5000			BPD-005	DD-502	1D5D5	811-005	29C1	3rd V. IF Dec.
C31	5000			BPD-005	DD-502	1D5D5	811-005	29C1	3rd V. IF Cath.
C32	5000			BPD-005	DD-502	1D5D5	811-005	29C1	3rd V. IF Fil.
C33	100			SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C34	100			SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C35	10000			BPD-01	DD-103	PTE4S1	811-01	36C1	RF Bypass
C36	.01	400		P488-01	D6-103	PTE4S1	811-01	4TM-S1	DAGC Decoupling
C37	5			SI5	TCZ-5.7	5W5V5	GP1K-5	M5-55	V. Diode Filter
C38	680	500		SI680	D6-681	1W5T7	GP2K-680	19C17	V. Amp. Cath. Byp.
C39	470	500		SI470	D6-471	5W5T5	GP2K-470	19C15	V. Amp. Cath. Byp.
C40	67	500			TCZ-68	5R5Q7	NPOM-67	36C9	Fixed Trimmer
C41	47	500		1469-00005	TCZ-47	5R5Q5	NPOM-50	29C14	Fixed Trimmer
C42	1	600		P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C43	1	600		P688-1	DF-104	PTE6P1		6TM-P1	Pic. Tube Cath.
C44	39	500		1468-00004	D6-390	5W5x4	GP1K-39	1FM-44	S. IF Coupling
C45	5000			BPD-005	DD-502	1D5D5	811-005	29C1	S. IF Screen
C46	01	600		P688-01	D6-103	PTE6S1	811-01	6TM-S1	S. IF Decoupling
C47	001	600		P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Diode Load Cap.
C48	3300			SI3300	D6-332	PTE6D3	GP2M-0033	36C12	De-emphasis
C49	05	200		P288-05	DF-503	PTE4S5		2TM-S5	Audio Coupling
C50	005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C51	01	600		P688-01	D6-103	PTE6S1	811-01	6TM-S1	Audio Coupling
C52	005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate Byp.
C53	005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate Byp.
C54	002	600		P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Integrator Net.
C55	005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Integrator Net.
C56	005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Integrator Net.
C57	4700	500		1467-005	D6-472	1D5D5	GP2M-0047	1FM-25	Vert. Osc. Grid
C58	1	600		P688-1		PTE6P1		6TM-P1	Vert. Discharge
C59	.01	600		P688-01	D6-103	PTE6S1	811-01	6TM-S1	Vert. Sweep Coupling
C60	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Hor. Sync. Coupling
C61	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Hor. Sync. Coupling
C62	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Hor. Feedback
C63	.01	600		P688-01	D6-103	PTE6S1	811-01	6TM-S1	Voltage Divider

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR KING PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C64	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Hor. Feedback
C65	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	AFC Filter
C66	.2	400		P488-22		GT4P2		4TM-P22	AFC Filter
C67	390	500		1468-0004	D6-391	5W5T4	GP2K-390	1FM-34	Hor. MV Feedback
C68	3900	500		1464-004		1DR5D4		MS-24	Fixed Trimmer
C69	390	500		1468-0004	D6-391	5W5T4	GP2K-390	1FM-34	Hor. Discharge
C70	270	500		1468-00025	D6-271	5W5T25	GP2K-270	1FM-325	Hor. Sweep Coupling
C71	24	3000							Hor. Feedback
C72	24	3000							Hor. Feedback
C73	24	3000							Hor. Feedback
C74	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Hor. Output Screen
C75	.1	600		P688-1		PTE6P1		6TM-P1	Damper Filter
C76	.05	600		P688-05		PTE6S5		6TM-S5	Damper Filter
C77	220	2500							Fixed Trimmer
C78	500	20000		HV20A	TV1-502				HV Filter
C79	.01	600		P688-01	D6-103	PTE6S1	811-01	6TM-S1	Line Filter
C80	.01	600		P688-01	D6-103	PTE6S1	811-01	6TM-S1	Line Filter

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	100KΩ	½		Concentrikit			
B	1 Meg.	½		B11-128 *			Brightness control-front
C	Shaft End			B11-137 *	RTV-165	SBB-532	Vert. hold control-rear
				E-187 *			Attach per instr. in "Concentrikit"
R2A	50KΩ	½		Q11-123	AG-44-8	B-31	Horiz. hold control
B	Shaft			Not Req.	FS-3	Not Req.	Attach to R2A per instructions
R3A	1000Ω	2					Contrast control-Wire Wound-panel - tapped at 750Ω
B	250KΩ	½			RTV-192		Volume control and switch-rear
R4	20Ω	2		W-20	43-20	VK-110	Vert. centering control-Wire Wound
R5	2500Ω	4			RTV-183	SVP-988	Focus control-Wire Wound
R6A	5000Ω	½		Q11-114	AM-19-S	AN-10	Vert. linearity control
B	Shaft			Not Req.	FKS-1/4	AK-1	Attach to R6A per instructions
R7A	2.5 Meg.	½		Q11-239	AM-84-S	AN-83	Height control
B	Shaft			Not Req.	FKS-1/4	AK-1	Attach to R7A per instructions
R8	1000Ω	2		WK-1000	43-1000	VK-1000	Horiz. centering control-Wire Wound

* Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	IRC PART No.	IDENTIFICATION CODES: ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R9	1000Ω	1		BTS-1000	RF Amp. Grid
R10	4700Ω	1		BTS-4700	RF Amp. Screen
R11	270KΩ 20%	1			Conv. Grid
R12	15KΩ 20%	1			Conv. Plate
R13	22KΩ	1			Osc. Grid
R14	4700Ω	1		BTS-4700	Osc. Plate
R15	10KΩ	1			1st Video IF Amp. Grid
R16	330Ω	1		BTS-330	AGC Network
R17	82Ω	1		BTS-82	1st Video IF Amp. Cathode
R18	100Ω	1		BTS-100	1st Video IF Amp. Decoupling
R19	8200Ω	1			2nd Video IF Amp. Grid
R20	82Ω	1		BTS-82	2nd Video IF Amp. Cathode
R21	100Ω	1		BTS-100	2nd Video IF Amp. Decoupling
R22	8200Ω	1			3rd Video IF Transformer Shunt
R23	100Ω	1		BTS-100	3rd Video IF Amp. Cathode
R24	100Ω	1		BTS-100	3rd Video IF Amp. Decoupling
R25	680KΩ	1		BTS-680K	AGC Diode Load
R26	1 Meg.	1		BTS-1 Meg.	AGC Network
R27	18KΩ	1		BTA-18K	Voltage Divider
R28	8200Ω	1		BTS-8200	Video Det. Diode Load
R29	1000Ω	1		BTS-1000	Bias Network
R30	120Ω	1			Parasitic Suppressor
R31	22KΩ	2		BTB-22K	Bleeder
R32	18KΩ	2		BTB-18K	Video Amp. Screen
R33	18KΩ	2		BTB-18K	Video Amp. Screen
R34	10KΩ	7		1 3/4A-10K	Video Amp. Plate-Wire Wound
R35	6800Ω	1		BTA-6800	Decoupling
R36	2200Ω	1		BTS-2200	Picture Tube Grid
R37	27KΩ	1		BTS-27K	Picture Tube Cathode
R38	220KΩ	1		BTS-220K	Voltage Divider
R39	470KΩ	1			Sound IF Amp. Grid
R40	12KΩ	1			Voltage Divider
R41	100KΩ	1			Sound IF Amp. Screen
R42	1000Ω	1		BTS-1000	Sound IF Amp. Decoupling
R43	47KΩ	1		BTS-47K	Ratio Det. Diode Load
R44	15KΩ	1		BTS-15K	De-emphasis
R45	10 Meg.	1		BTS-10 Meg.	AF Amp. Grid
R46	330KΩ	1		BTA-330K	AF Amp. Plate
R47	470KΩ	½		BTS-470K	Audio Output Grid
R48	220Ω	1		BTA-220	Audio Output Cathode
R49	270KΩ	1		BTS-270K	DC Rest. Load
R50	3.3 Meg.	1		BTS-3.3 Meg.	Sync. Sep. Plate
R51	3900Ω	1		BTS-3900	Sync. Sep. Cathode
R52	3900Ω	1		BTS-3900	Sync. Sep. Plate
R53	3900Ω	1		BTS-3900	Sync. Sep. Plate
R54	22KΩ	1		BTS-22K	Integrator
R55	8200Ω	1		BTS-8200	Integrator
R56	8200Ω	1		BTS-8200	Integrator
R57	1.2 Meg.	1		BTS-1.2 Meg.	Vert. Osc. Grid
R58	1 Meg.	1		BTS-1 Meg.	Vert. Hold Control Shunt
R59	100KΩ	1		BTS-100K	Voltage Divider

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR KING PART No.	IRC PART No.	IDENTIFICATION CODES
R60	6.8 Meg.	½		BTS-6.8 Meg.	Voltage Divider
R61	470KΩ	½		BTS-470K	Vert. Osc. Plate
R62	56KΩ	½		BTS-56K	Vert. Osc. Decoupling
R63	3300Ω	½		BTS-3300	Vert. Peaking
R64	2.2 Meg.	½		BTS-2.2 Meg.	Vert. Amp. Grid
R65	560Ω	½		BTS-560	Vert. Amp. Cathode
R66	100KΩ	½		BTS-100K	Horiz. Phase Det. Load
R67	100KΩ	½		BTS-100K	Horiz. Phase Det. Load
R68	4.7 Meg.	½		BTS-4.7 Meg.	Horiz. Phase Det. Load
R69	470KΩ	½		BTS-470K	Horiz. AFC Filter Network
R70	1500Ω	½		BTS-1500	Horiz. Mult. Cathode
R71	4700Ω	1		BTA-4700	Horiz. Mult. Plate
R72	100KΩ	½		BTS-100K	Horiz. Mult. Grid
R73	68KΩ	½		BTS-68K	Horiz. Hold Control Shunt
R74	270KΩ	½		BTS-270K	Horiz. Mult. Plate Decoupling
R75	4700Ω	1		BTA-4700	Filter
R76	1 Meg.	½		BTS-1 Meg.	Horiz. Output Grid
R77	82Ω	1		BW-1-82	Horiz. Output Cathode
R78	68Ω	½			Parasitic Suppressor
R79	8200Ω	2		BTB-8200	Horiz. Output Screen
R80	8200Ω	2		BTB-8200	Horiz. Output Screen
R81	1800Ω	1		BTS-1800	Feedback Network
R82	33KΩ	½		BTS-33K	Feedback Network
R83	10KΩ	20		2D-10K	Damper Filter-Wire Wound
R84	100Ω	½		BTS-100	Focus Coil Shunt
R85	1000Ω	4		1 3/4A-1000	Filter-Wire Wound
R86	100Ω	2			Surge Limiter
R87	10Ω	1		BW-1-10	Bias Network
R88	1.2Ω	1		BW-1-1.2	Filament Dropping-Wire Wound
R89	1500Ω	7		1 3/4A-1500	Series Focus Coil-Wire Wound

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIR KING PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	700VCT	5VAC	6.3VAC			P-3067 ④	TP-375 ②
	ⓐ 1.9A	.210ADC Tap ⓐ	ⓐ 3A	ⓐ 8.3A				
		340VCT .050ADC						

② Drill new mounting holes.
④ Add series resistor to reduce plate voltage.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: AIR KING PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	150Ω	1400Ω		A-8111 ①	A-3000 ①	TBO-1 ①	Vert. Block Osc. Trans
T3	470Ω	10.2Ω			HVO-6		Hor. Output Trans.
	Tap ⓐ 120Ω	Tap ⓐ .6Ω & 7.6Ω					
T4	560Ω	7Ω		A-8116 ②	A-3035 ②	TSO-1 ②	Vert. Output Trans.
T5A	13Ω			DY-7	MD-70F		Hor. Deflection Coil
B	96Ω						Vert. Deflection Coil
T6	1400Ω						Focus Coil

① Drill one new mounting hole.
② Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: AIR KING PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	3800Ω	3.9Ω	340Ω	.7Ω		A-3850 ①	A-3026	RO-301 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: AIR KING PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	PM	3.9Ω	PC-5866	ST-105 ③ MOD.P5-X	5A07 ③	③ Remount output transformer.
	CONE DIA.	V. C. DIA.				
SP2	4 5/8"	9/16"				

PARTS LIST CONTINUED ON PAGE 15

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ~	AIR KING PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.210ADC	130Ω	4.3 Henries		C-2325	C-2996	TR-4200①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	AIR KING PART No.	MEISSNER PART No.	
L2	Ant. Coil	.1Ω	0Ω			
L3	Ant. Coil	.1Ω				
L4	Ant. Coil	0Ω	0Ω			Channel 6
L5	Osc. Coil	0Ω				Channel 6
L6	Osc. Coil	0Ω				Channel 13
L7	Fil. Choke	.1Ω				
L8	1st Video IF	.5Ω				
L9	Fil. Choke	0Ω				
L10	2nd Video IF	.3Ω				
L11	Fil. Choke	0Ω				
L12	RF Choke	2.7Ω				
L13	3rd Video IF	.3Ω				
L14	Fil. Choke	0Ω				
L15	RF Choke	2.7Ω				
L16	4th Video IF	.3Ω				
L17	Peaking	5.2Ω				Red dot
L18	Peaking	13Ω				
L19	Peaking	7.5Ω				Blue dot
L20	Peaking	9.5Ω				Green dot
L21	Sound IF	1.7Ω	1.7Ω			
L22	Ratio Det. Trans.	6Ω	1.5Ω			
L23	Horiz. Osc.	68Ω				
L24	Horiz. Lin.	32Ω				
L25	Width Coil	.4Ω				

MISCELLANEOUS

ITEM No.	PART NAME	AIR KING PART No.	NOTES
M1	RF Tuner		
M2	Fuse		.25A 250V Type 3AG
M3	Ion Trap		

PHOTOFACT* Folder

BENDIX MODELS
2051, 2060, 3051, 6001, 6003,
6090, 6100, 6920, 6990

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MODEL 6100

BENDIX MODELS
2051, 2060, 3051, 6001, 6003,
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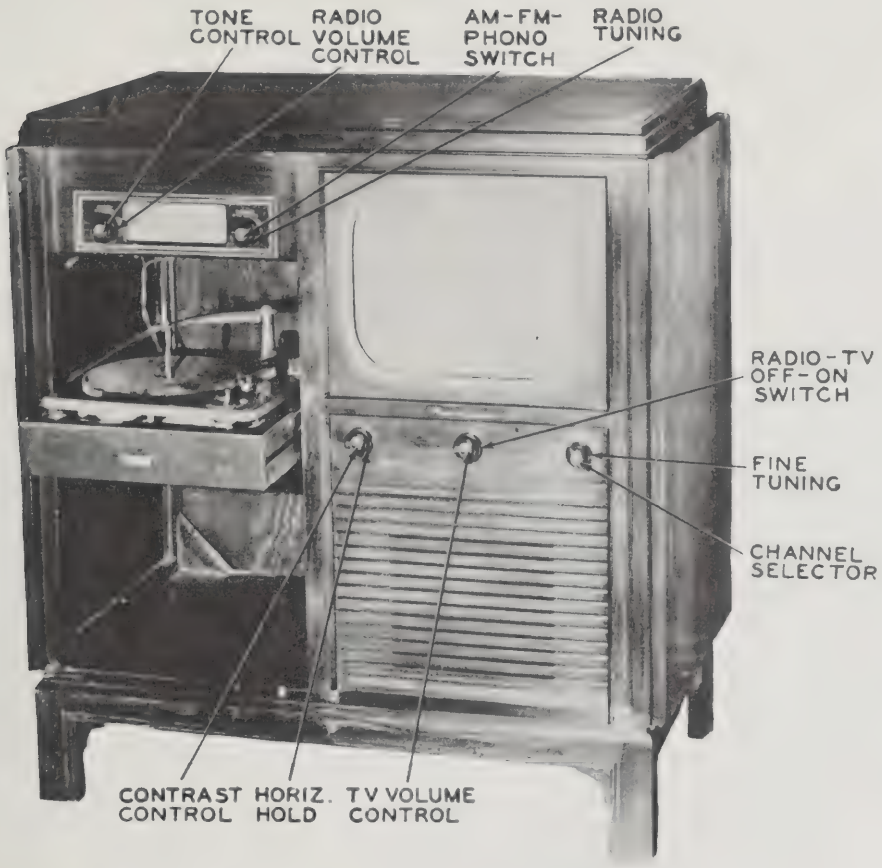

BENDIX MODEL 6100

TRADE NAME	Bendix, Models 2051, 2060, 3051, 6001, 6003, 6090, 6100, 6920, 6990
MANUFACTURER	Bendix Radio Div. of Bendix Aviation, Baltimore, Maryland
TYPE SET	TV-AM-FM-Phono Combination (Some Models "TV" Only).
TUBES	Twenty Four (Combination Models) Seventeen ("TV Only" Models)
POWER SUPPLY	110-120 Volts AC-60 Cycle
RATING	1.5 Amp. at 117 Volts AC (TV), .47 Amp. at 117 Volts AC (Radio)
TUNING RANGE—BROADCAST	540-1620KC FREQ. MOD. 88-108MC TV Channels 2 thru 13

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RECORD CHANGER WEBSTER-CHICAGO MODEL 100

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

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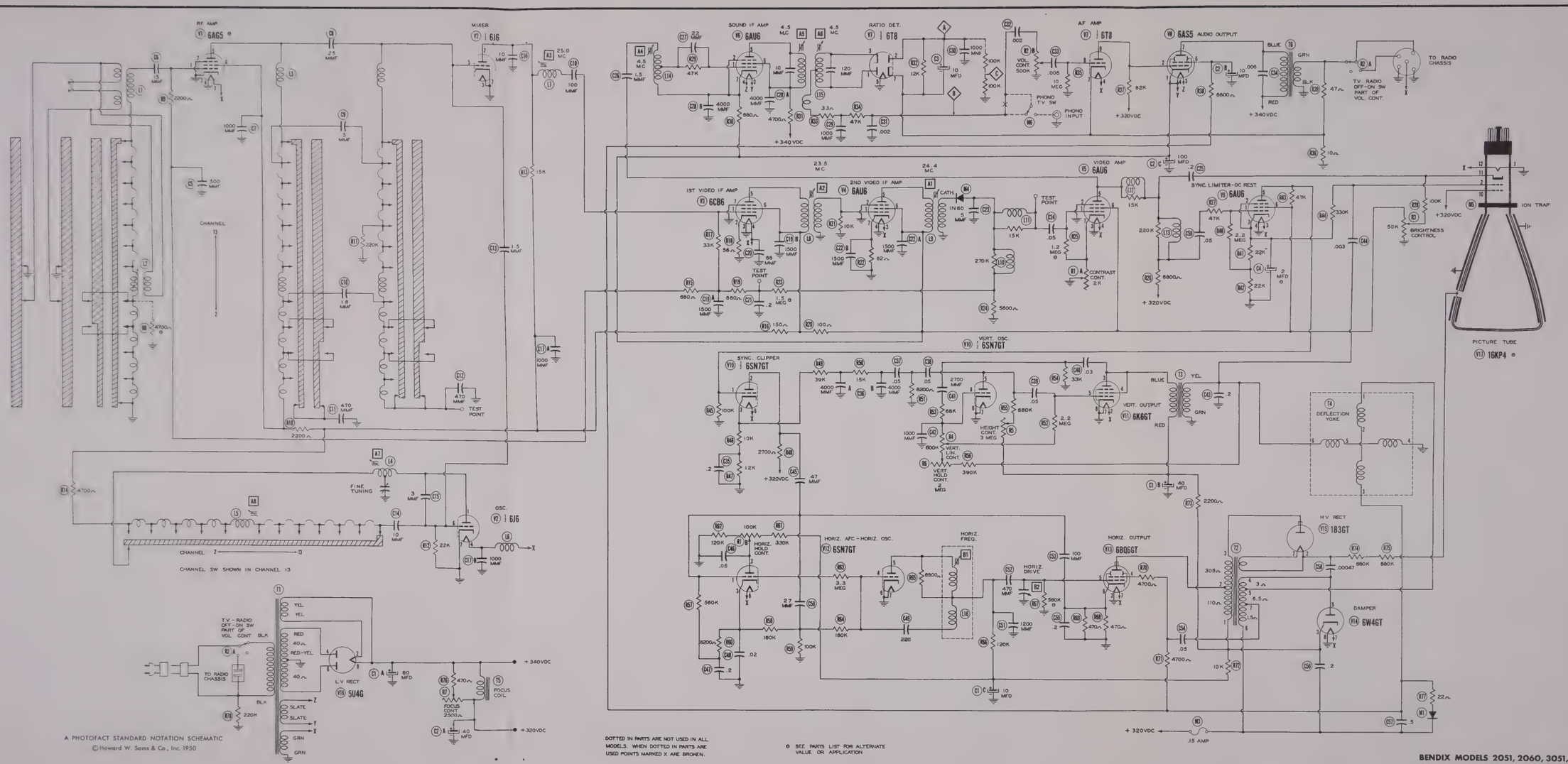
BENDIX MODELS 2051, 2060, 3051, 6001, 6003, 6090, 6100, 6920, 6990



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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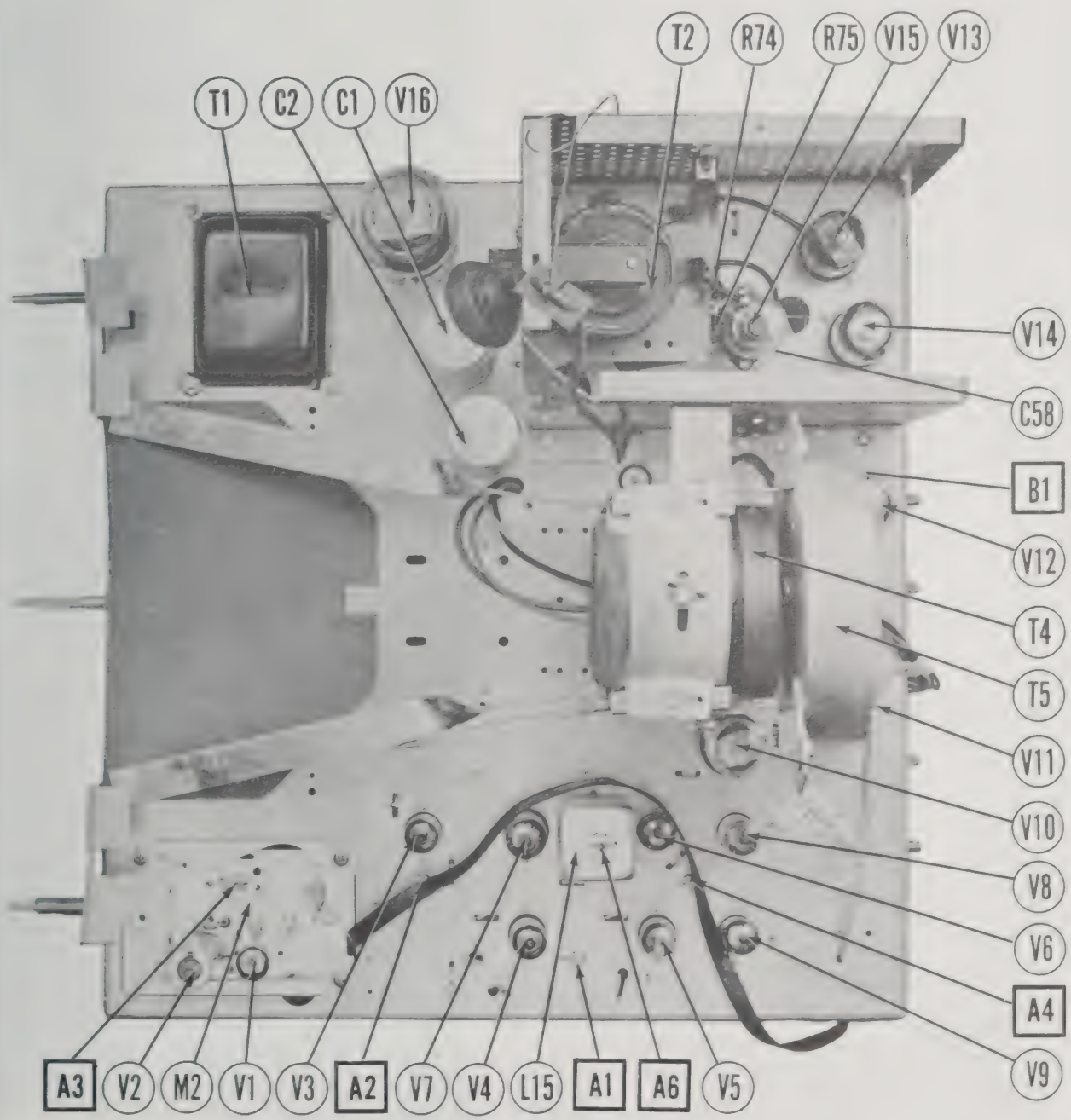
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.

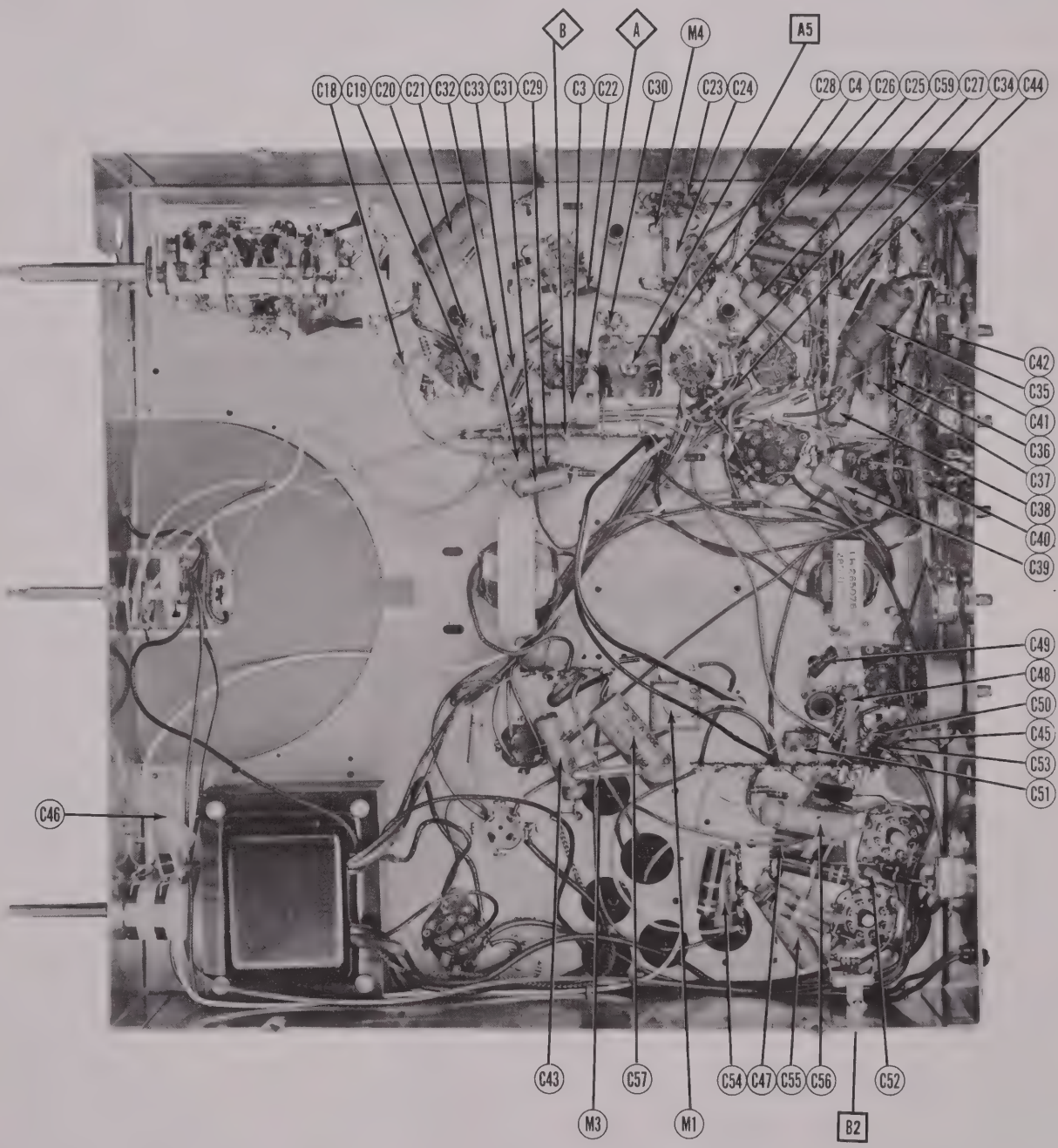
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

BENDIX MODELS 2051, 2060, 3051, 6001, 6003, 6090, 6100, 6920, 6990

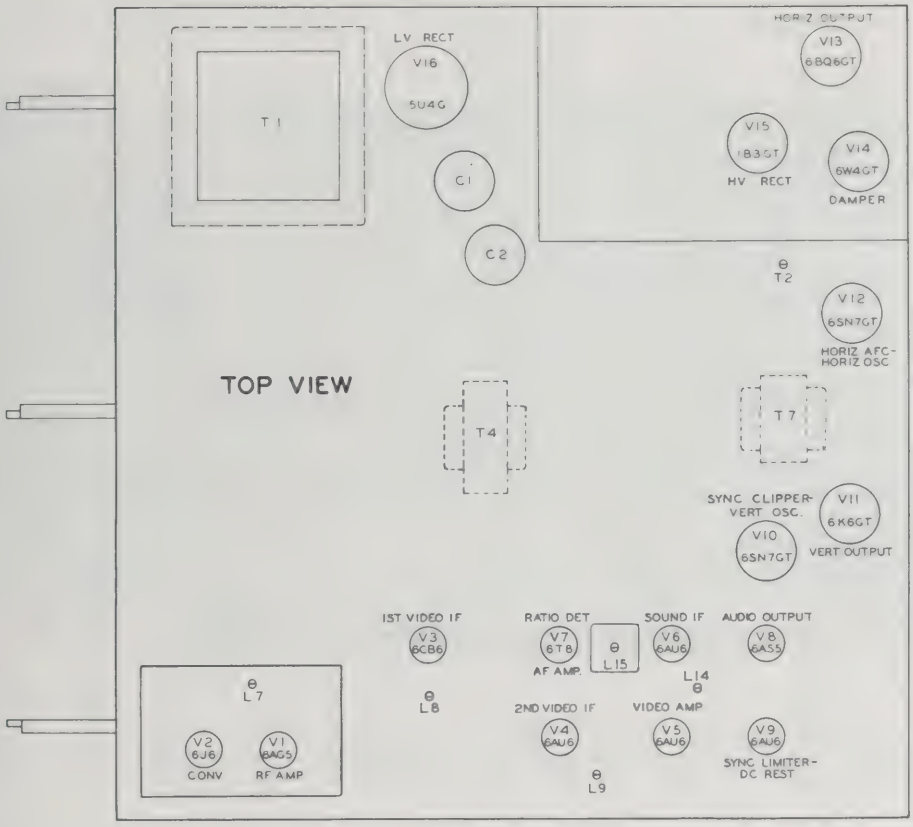
BENDIX MODELS 2051, 2060, 3051, 6001, 6003, 6090, 6100, 6920, 6990

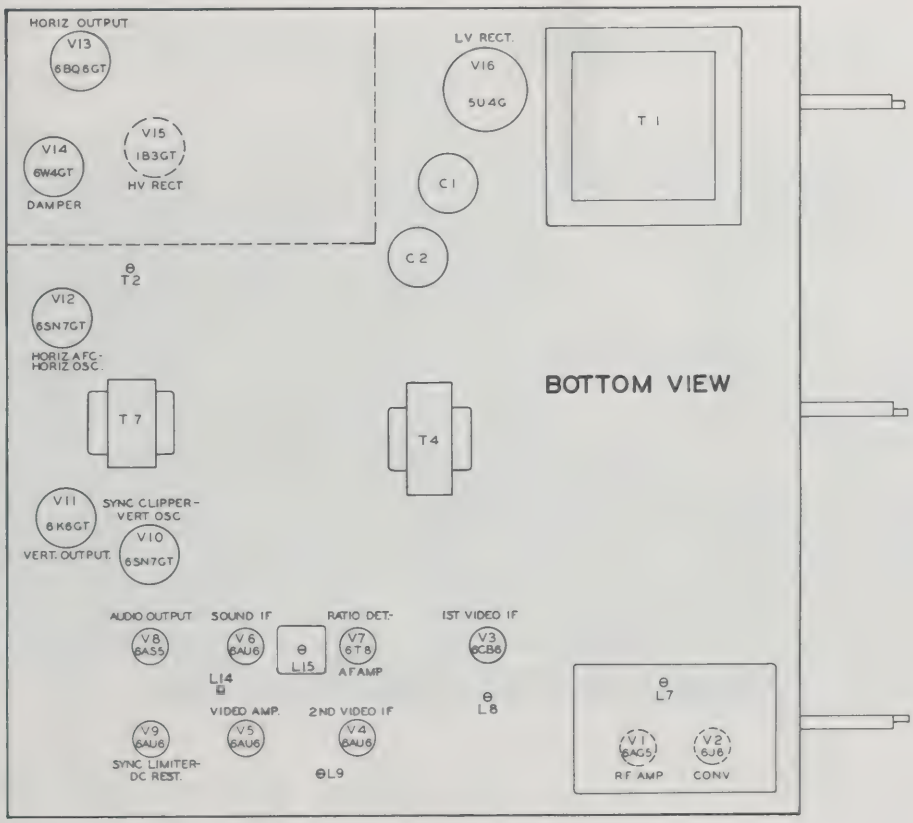


TV CHASSIS TOP VIEW

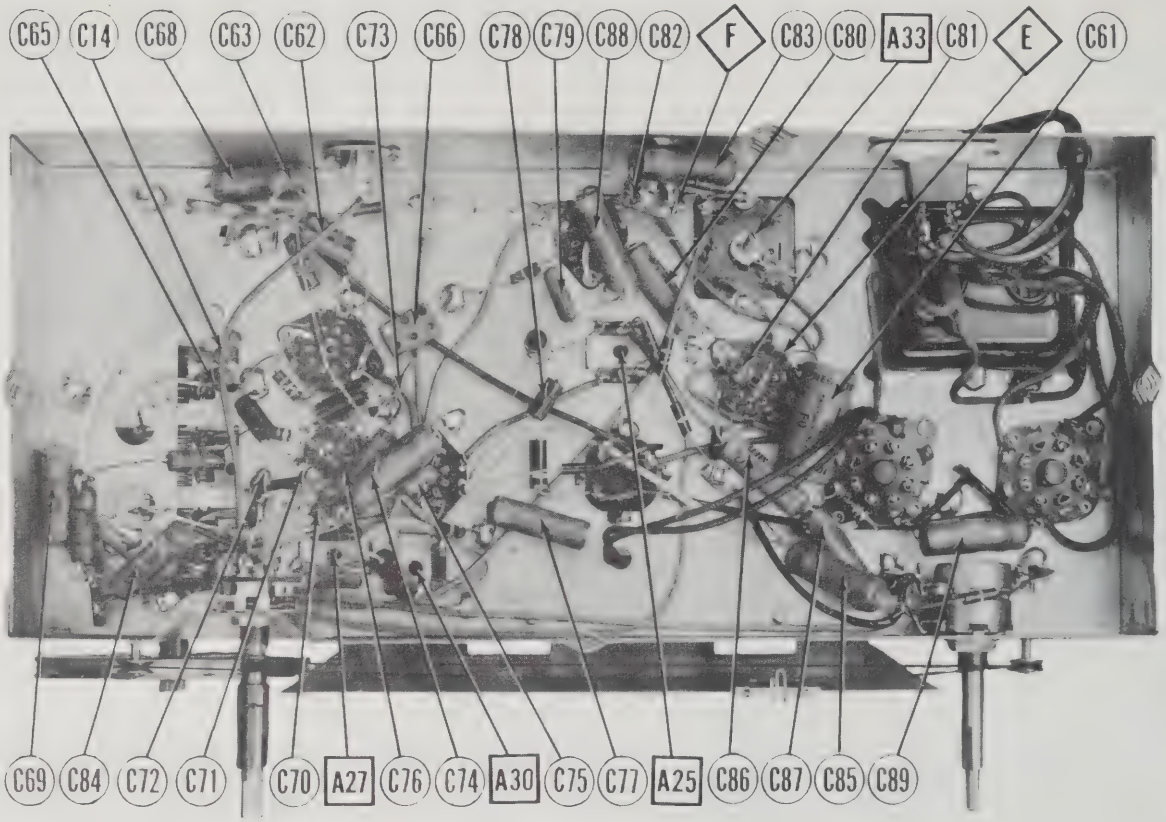


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

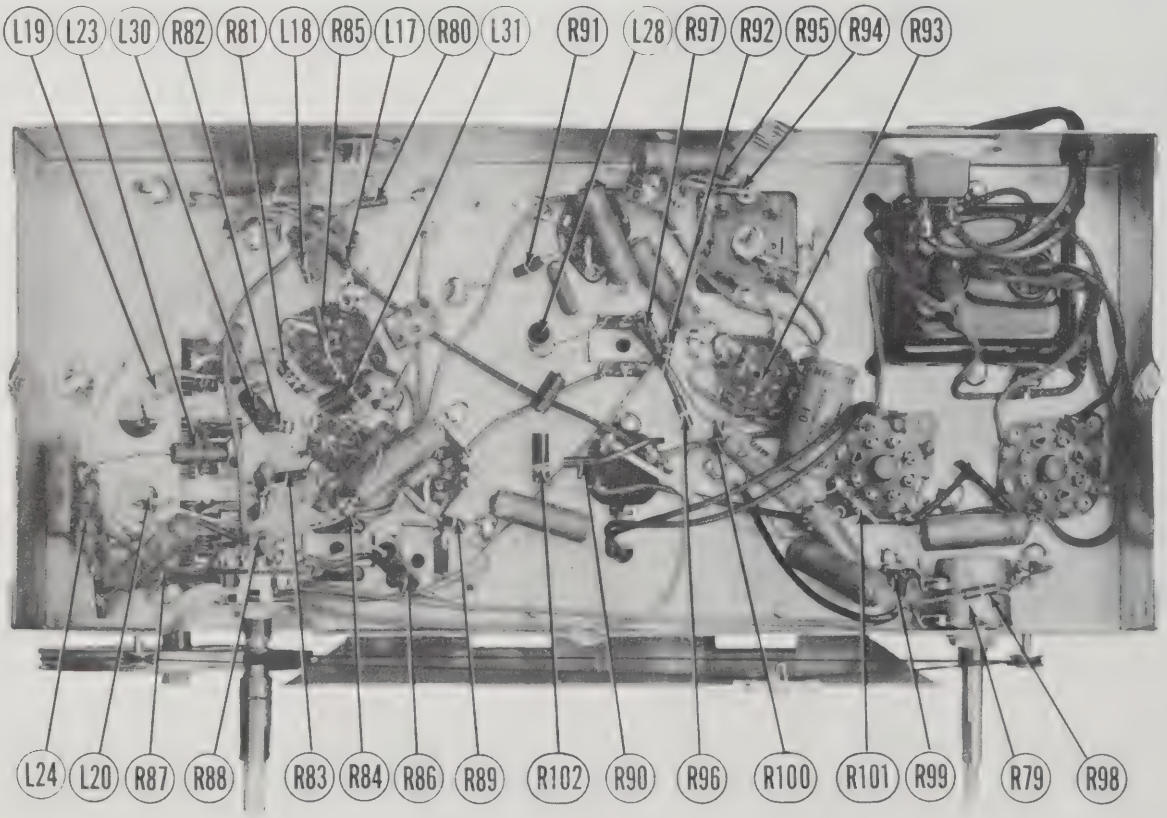




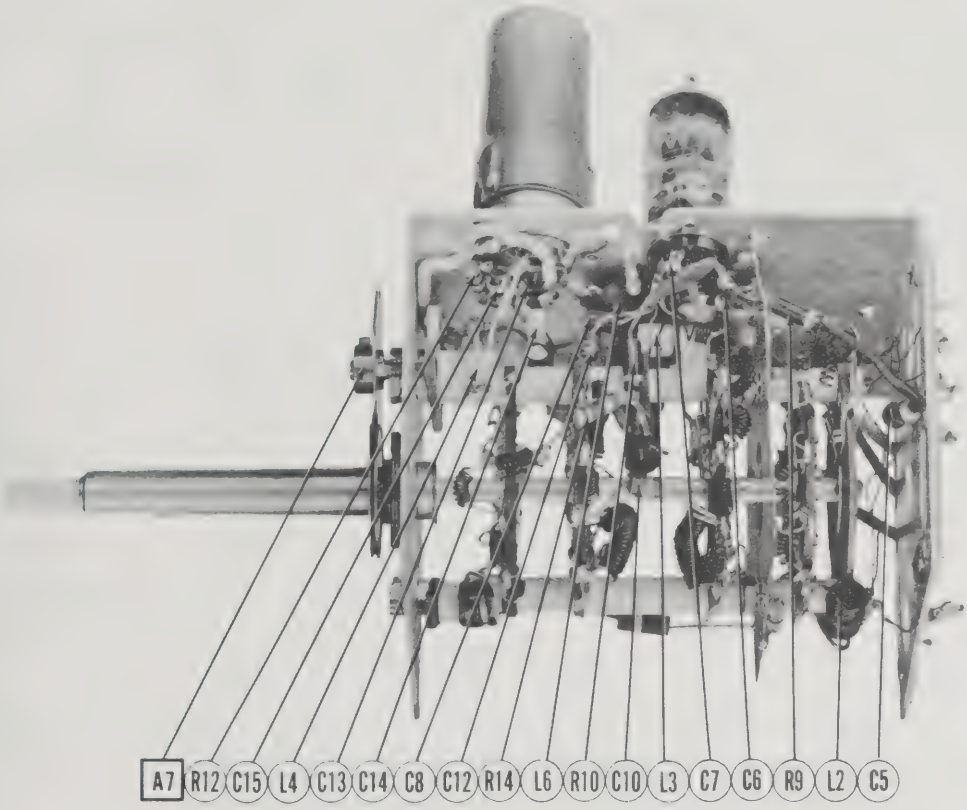
TUBE PLACEMENT CHART



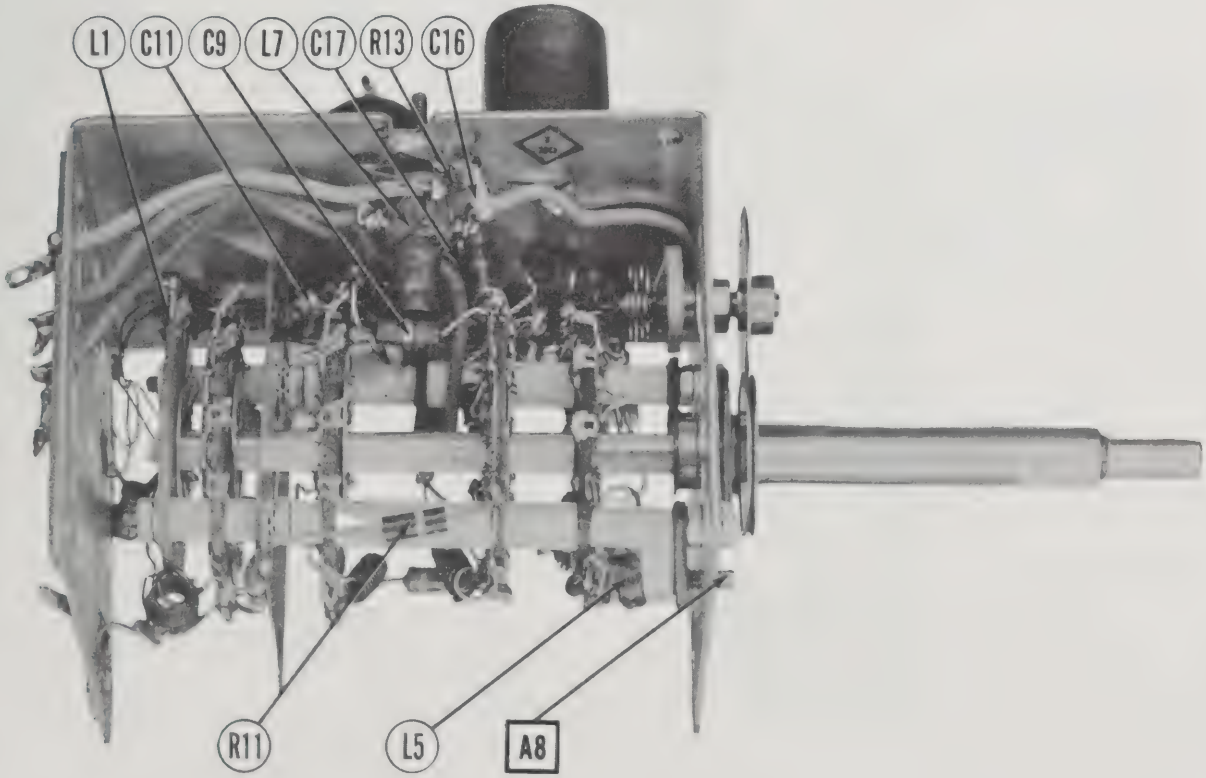
RADIO CHASSIS-BOTTOM VIEW-CAPACITOR IDENTIFICATION



RADIO CHASSIS-BOTTOM VIEW-RESISTOR IDENTIFICATION



TV RF TUNER-RIGHT SIDE



TV RF TUNER-LEFT SIDE

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To eliminate the high voltage shock hazard remove the horizontal output tube (V13) from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 with pin 1 removed to prevent erroneous indications.
Connect the negative terminal of 1.5 volt battery to the junction of R23 and C21 and the positive terminal to chassis.
Turn the RADIO-OFF-TV switch to TV position (fully clockwise).

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24.4MC (Unmod.)	Any	DC Probe to "Video Test Point". Common to chassis.	A1	Adjust for maximum deflection. Attenuate signal generator to maintain a -1.5 volts reading.
2.	Direct	"	23.5MC	"	"	A2	"
3.	Direct	"	25MC	"	"	A3	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24MC (10MC SWP)	21.75MC 23MC 25.75MC	Any	Vert. Amp. thru 47KΩ to "Video test point". Low side to chassis.		Check for response curve similar to figure 1. The 23MC and 25.75MC markers should be at 50% response. If necessary, slightly retouch A1 thru A3 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from Point B to chassis. The junction of these two resistors is alignment Point C as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.05MFD	High side to pin 1 (Grid) of 6AU6 (V5). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (A). Common to chassis.	A4, A5	Adjust for maximum deflection.
6.	.05MFD	"	"	"	DC Probe to Point (B). Common to Point (C).	A6	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.05MFD	High side to pin 1 (Grid) of 6AU6 (V5). Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	Any	Vert. Amp. to Point (A). Low side to chassis.	A4, A5	Disconnect stabilizer capacitor C3. Adjust for maximum amplitude and symmetry as per figure 2.
6.	.05MFD	"	"	"	"	Vert. Amp. to Point (B). Low side to chassis.	A6	Reconnect capacitor C3. Adjust A6 to place 4.5MC at center of crossover lines as per figure 3. SLIGHTLY retouch A5 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT (AR0T05 TUNER)

Remove the dummy converter tube and replace with original 6J6 in its socket.
Connect a 3 volt battery as in Video IF Alignment.
The RF and Mixer portion of this tuner is pre-set at the factory, and is very stable and should not normally require adjustment in the field.
Set the fine tuning control to the mid-position of its range.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to "Video Test Point". Low side to chassis.	A7	Adjust to place sound marker as shown in figure 4. The video marker should be at 50% response.
8.	"	"	207MC (10MC SWP)	205.25MC 209.75MC	12	"		Check all high band channels to see that the sound marker can be placed well within the range of the fine tuning control. If not, a compromise adjustment of A7 will be necessary.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
9.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6		A8	Adjust to place sound marker as shown in figure 4. The video marker should be at 50% response.
10.	"	"	79MC (10MC SWP)	77.25MC 81.75MC	5			Check all low band channels to see that the sound marker can be placed well within the tuning range of the fine tuning control. If not, a compromise adjustment of A8 will be necessary.
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

TV ALIGNMENT INSTRUCTIONS (CONT.)

RF ALIGNMENT (AR0T03 TUNER)

Remove the 1st IF tube (V3) from its socket.
Connect a 1.5 volt battery as in Video IF Alignment.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon res.	Across the antenna terminals with 120Ω in each lead.	207MC (10MC SWP)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to Point ◇. Low side to chassis.	A9, A10, A11	Adjust for response curve similar to figure 5 with markers as shown.
12.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"		Check for response curve similar to figure 5. If optimum response is desired on any particular channel, make a slight adjustment of A9, A10, and A-11 with channel selector set for that channel. Recheck all channels to see that they have not been seriously effected.
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
			85MC (10MC SWP)	83.25MC 87.75MC	6			
			79MC (10MC SWP)	77.25MC 81.75MC	5			
			69MC (10MC SWP)	67.25MC 71.75MC	4			
			63MC (10MC SWP)	61.25MC 65.75MC	3			
			57MC (10MC SWP)	55.25MC 59.75MC	2			

OSCILLATOR ALIGNMENT (AR0T03 TUNER)

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect a 3 volt battery as in Video IF Alignment.
Replace the 1st IF tube (V3) in its socket.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to "Video Test Point." Low side to chassis.	A12	Adjust to place video marker at 50% response as shown in figure 4.
			207MC (10MC SWP)	205.25MC 209.75MC	12		A13	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A14	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A15	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A16	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A17	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A18	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A19	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A20	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A21	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A22	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A23	

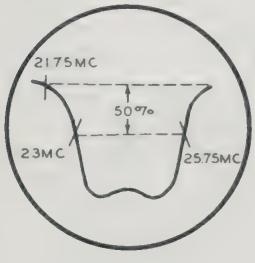


FIG.1

FIG. 2

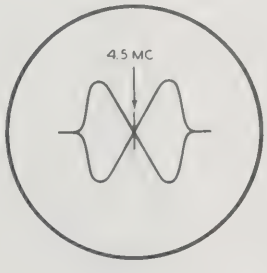


FIG. 3

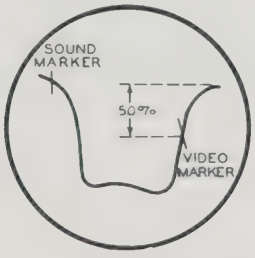


FIG.4

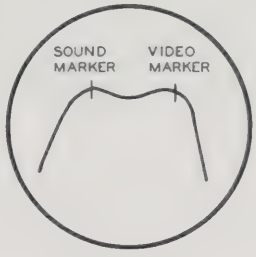


FIG.5

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set pointer to last reference mark at the low frequency end of dial backing plate.
Turn Radio-Off-TV switch to Radio position (fully counter-clockwise).

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
14.	.01MFD	High side to pin 7 (Grid) of 6BE6 (V19). Low side to chassis.	455KC (400 ∿ Mod.)	AM (1st position CW)	Tuning gang fully open	Across voice coil	A24, A25, A26, A27	Adjust for maximum output.
15.		Loop	1475KC	"	Set pointer to 1st reference mark at high frequency end of dial backing plate.	"	A28, A29	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point F to chassis. The junction of these two resistors is alignment Point G as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
16.	.01MFD	High side to pin 7 (Grid) of 12AT7 (V18). Low side to chassis.	10.7MC (Unmod.)	FM (fully CW)	Tuning gang fully open	DC Probe to Point (E). Common to chassis.	A30, A31, A32, A33	Adjust for maximum deflection.
17.	.01MFD	"	"	"	"	DC Probe to Point (F). Common to Point (G).	A34	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
16.	.01MFD	High side to pin 7 (Grid) of 12AT7 (V18). Low side to chassis.	10.7MC (450KC Sweep)	FM (fully CW)	Tuning gang fully open	Vert. Amp. to Point (E). Low side to chassis.	A30, A31, A32, A33	Disconnect stabilizer capacitor C61. Adjust for maximum amplitude and symmetry as per figure 6.
17.	.01MFD	"	"	"	"	Vert. Amp. to Point (F). Low side to chassis.	A34	Reconnect capacitor C61. Adjust A34 to place 10.7MC at center of crossover lines as per figure 7. SLIGHTLY retouch A33 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
18.	300Ω carbon res.	High side thru 300Ω to FM antenna terminal. Low side to chassis.	106MC (Unmod.)	FM (fully CW)	Turn tuning gang until pointer is at 2nd reference mark from high frequency end of dial backing plate.	DC Probe to Point (E). Common to chassis.	A35, A36	Adjust for maximum deflection.

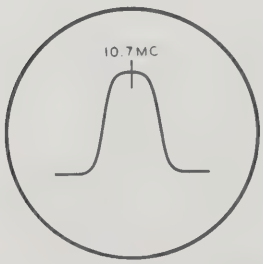


FIG. 6

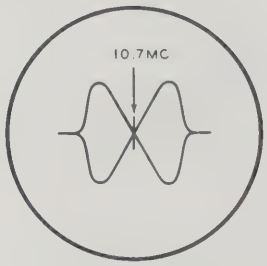


FIG. 7

RADIO CHASSIS-TOP VIEW

BENDIX MODELS 2051, 2060, 3051, 6001, 6003, 6090, 6100, 6920, 6990

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.2VDC	0V.	6.3VAC	0V.	130VDC	130VDC	0V.		
V 2	6J6	125VDC	100VDC	0V.	6.3VAC	-1.4VDC	§-7VDC	0V.		
V 3	6CB6	-.2VDC	.8VDC	0V.	6.3VAC	160VDC	160VDC	0V.		
V 4	6AU6	0V.	0V.	6.3VAC	0V.	165VDC	165VDC	.9VDC		
V 5	6AU6	.6VDC	0V.	0V.	6.3VAC	275VDC	165VDC	30VDC		
V 6	6AU6	#4VDC	#5.6VDC	#0V.	#6.3VAC	#110VDC	#110VDC	#5.6VDC		
V 7	6T8	-.4VDC	-.6VDC	-.4VDC	6.3VAC	0V.	0V.	0V.	-.6VDC	150VDC
V 8	6AS5	#0V.	#-10VDC	#6.3VAC	#0V.	#-10VDC	#130VDC	#165VDC		
V 9	6AU6	2VDC	38VDC	6.3VAC	0V.	85VDC	165VDC	38VDC		
V 10	6SN7GT	85VDC	300VDC	100VDC	-35VDC	225VDC 80VDC	0V.	0V.	6.3VAC	
V 11	6K6GT	0V.	6.3VAC	460VDC	460VDC	-6VDC -3.6VDC	0V.	0V.	0V.	
V 12	6SN7GT	-3.5VDC	90VDC	-16VDC	-65VDC	185VDC	0V.	0V.	6.3VAC	
V 13	6BQ6GT	20VDC	0V.	185VDC	180VDC	-5.8VDC	0V.	6.3VAC	20VDC	TOP CAP *
V 14	6W4GT	0V.	500VDC	500VDC	0V.	320VDC	0V.	6.3VAC	0V.	
V 15	1B3GT	* DO NOT MEASURE.								
V 16	5U4G	0V.	340VDC	0V.	320VAC	0V.	320VAC	0V.	340VDC	
V 17	16KP4	0V.	9VDC	PIN 10 320VDC	PIN 11 0V. 165VDC	PIN 12 6.3VAC				

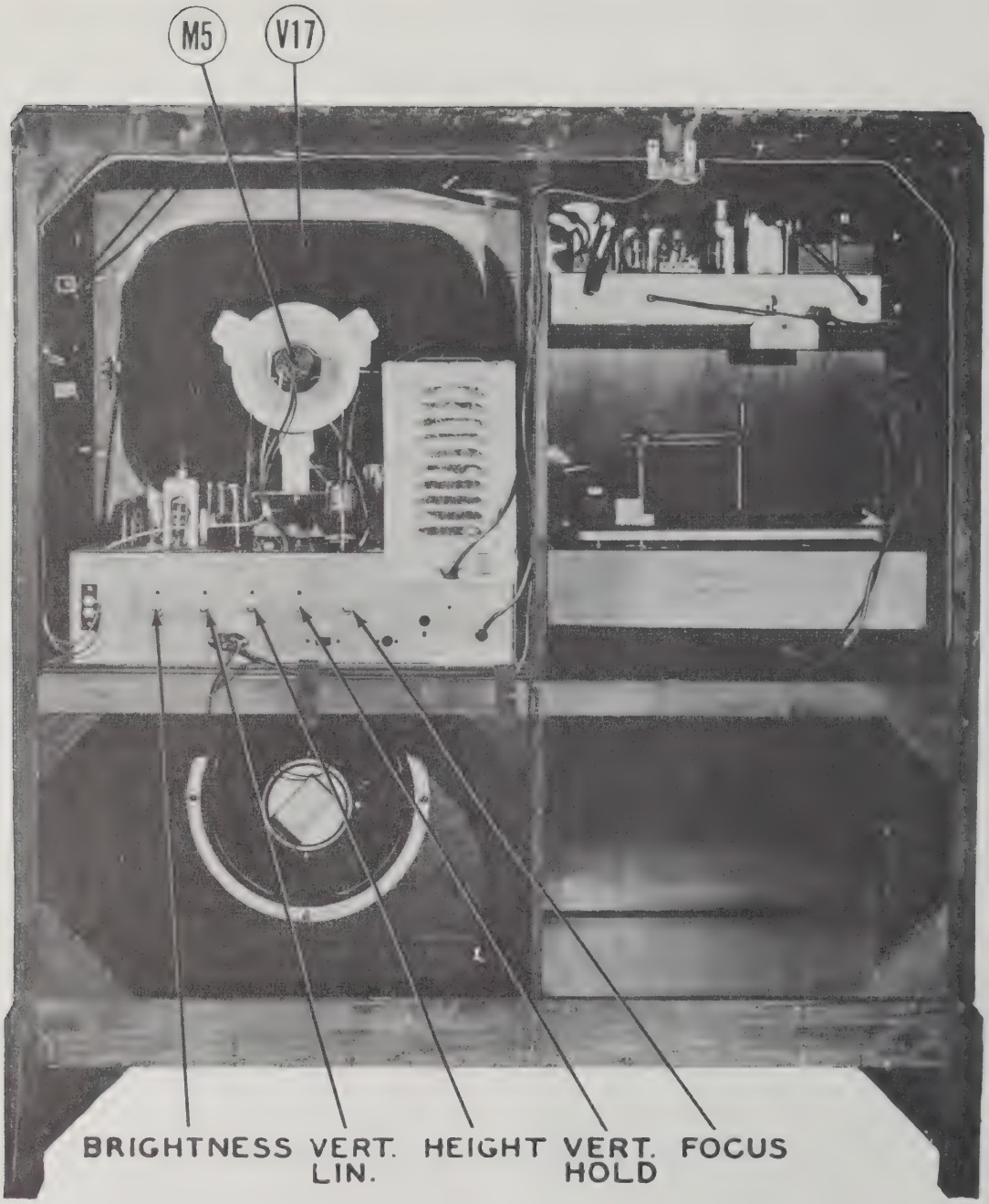
FUNCTION SWITCH IN "TV" POSITION.
FOCUS CONTROL SET FULLY COUNTERCLOCKWISE.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
# MEASURED FROM PIN 1 OF V8.
* DO NOT MEASURE.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	1.5 Meg.	0Ω	.1Ω	0Ω	#2.5KΩ	#2.5KΩ	0Ω		
V 2	6J6	#5KΩ	#15KΩ	0Ω	.3Ω	220KΩ	22KΩ	0Ω		
V 3	6CB6	1.5 Meg.	56Ω	0Ω	.1Ω	#100Ω	#100Ω	0Ω		
V 4	6AU6	.3Ω	0Ω	.1Ω	0Ω	#.3Ω	#0Ω	82Ω		
V 5	6AU6	1.2 Meg.	0Ω	0Ω	.1Ω	†7KΩ	#0Ω	2KΩ		
V 6	6AU6	#47KΩ	#680Ω	#0Ω	#.1Ω	†5KΩ	†5KΩ	#680Ω		
V 7	6T8	Inf.	12KΩ	Inf.	.1Ω	0Ω	Inf.	10Ω	10 Meg.	†82KΩ
V 8	6AS5	#0Ω	†82KΩ	#.1Ω	#0Ω	†82KΩ	†8KΩ	†385Ω		
V 9	6AU6	2.2 Meg.	44KΩ	.1Ω	0Ω	#40KΩ	#0Ω	44KΩ		
V 10	6SN7GT	50KΩ	†3KΩ	22KΩ	1 Meg. 3 Meg.	▲ 680KΩ ▲3.7 Meg.	0Ω	0Ω	.1Ω	
V 11	6K6GT	Inf.	.1Ω	▲2.9KΩ	▲2.9KΩ	2.6 Meg. 5.2 Meg.	Inf.	0Ω	0Ω	
V 12	6SN7GT	750KΩ	▲330KΩ	280KΩ	280KΩ	▲130KΩ	0Ω	0Ω	.1Ω	
V 13	6BQ6GT	235Ω	0Ω	▲130KΩ	†10KΩ	560KΩ	Inf.	.1Ω	235Ω	TOP CAP ▲110Ω
V 14	6W4GT	Inf.	▲0Ω	60KΩ	Inf.	†250Ω	Inf.	.1Ω	0Ω	
V 15	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP ▲415Ω
V 16	5U4G	Inf.	45KΩ	Inf.	40Ω	Inf.	40Ω	Inf.	45KΩ	
V 17	16KP4	0Ω	375KΩ	PIN 10 †250Ω	PIN 11 140KΩ 100KΩ	PIN 12 :1Ω				

MEASURED FROM PIN 1 OF V8.
† MEASURED FROM PIN 8 OF V16.
▲ MEASURED FROM PIN 3 OF V14.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

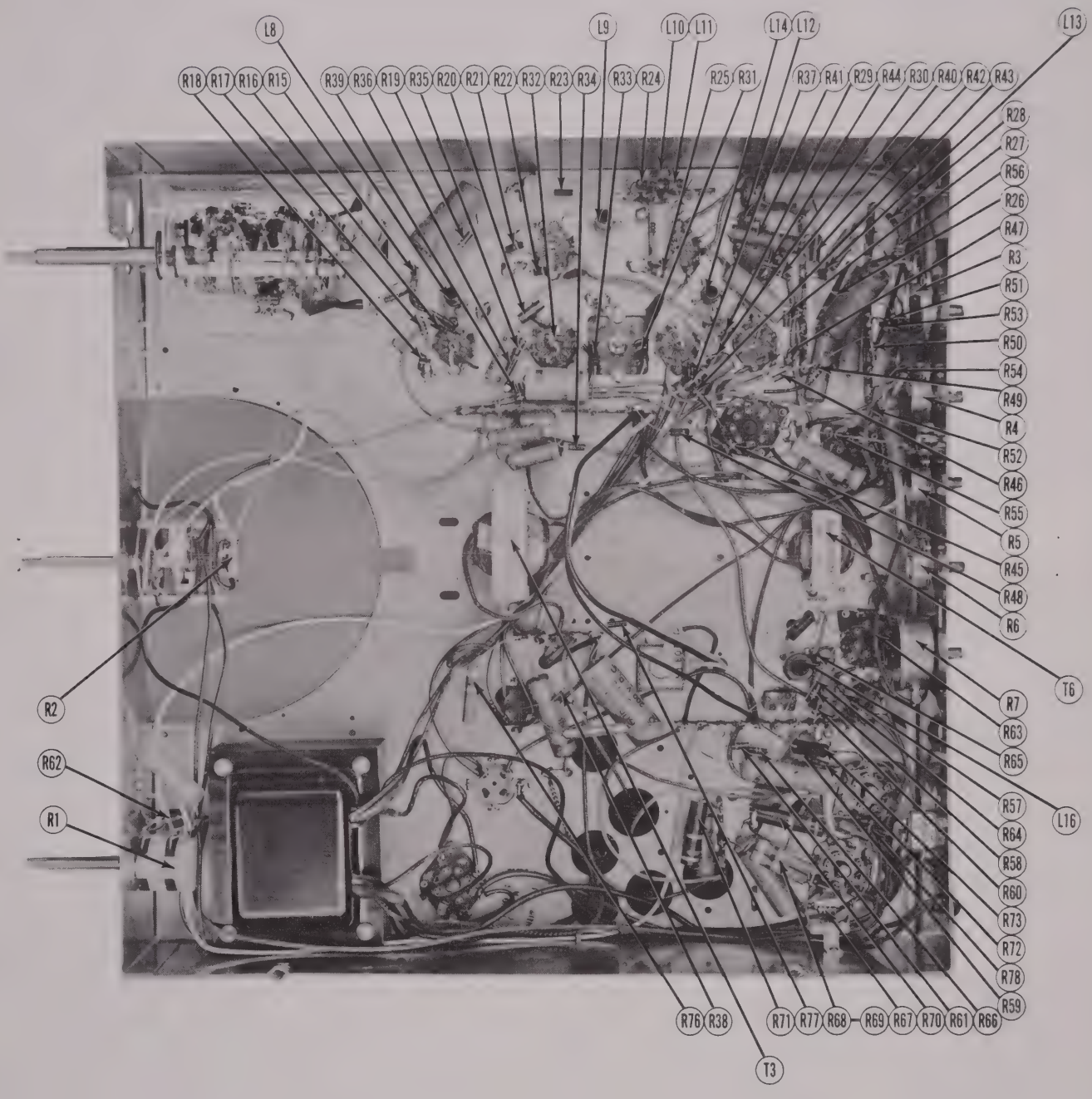
Turn the set on and tune in a TV station preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range and adjust the horizontal frequency slug (B1) until picture synchronizes horizontally.

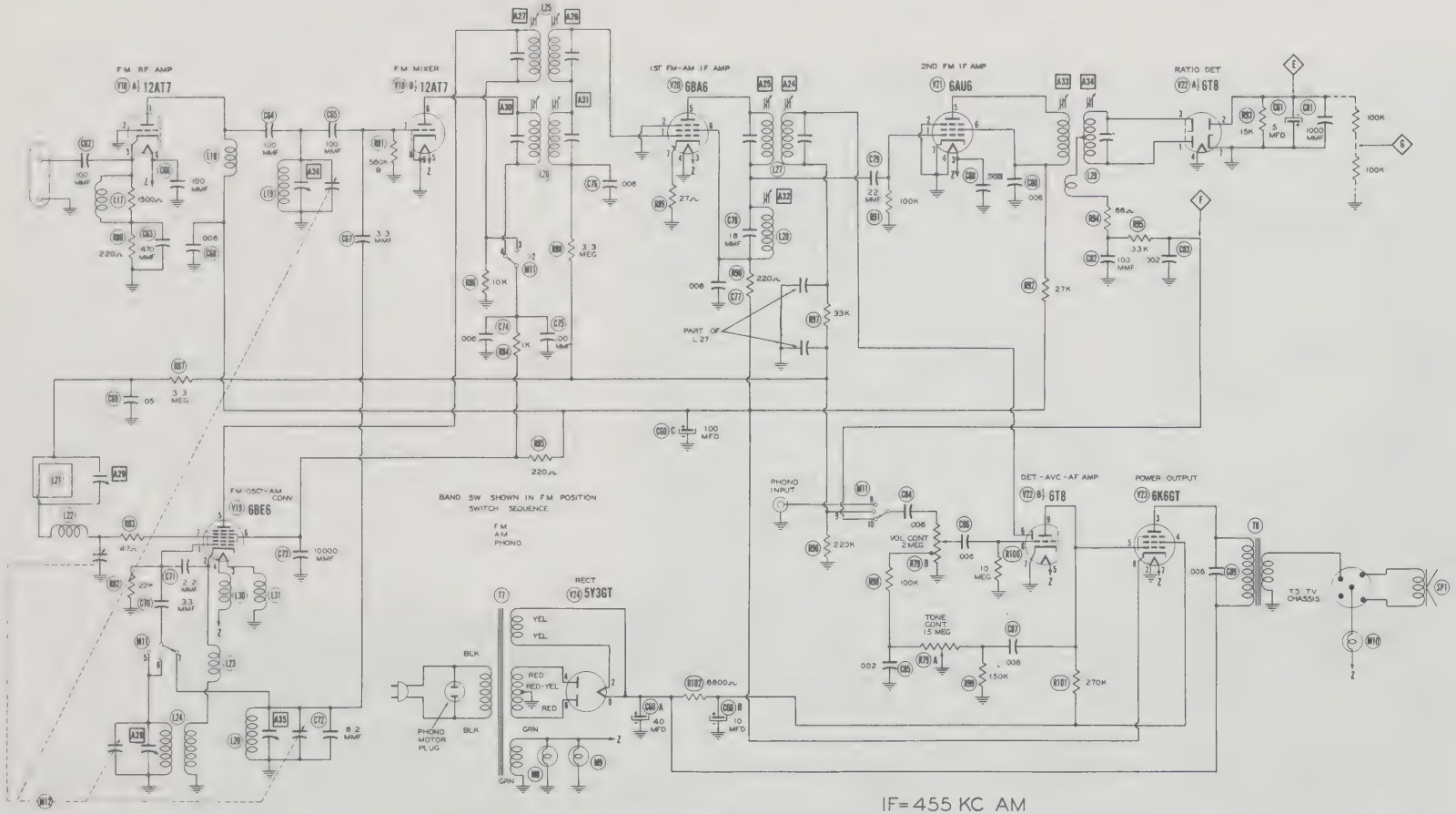
Adjust the horizontal drive trimmer (B2) for best compromise between brightness and horizontal linearity.

On the 12 1/2 inch models, the picture may be varied by positioning of the aluminum sleeve (B3) placed over the neck of the tube. Moving the sleeve farther into the deflection yoke will reduce the width of the picture.

CAUTION: Always short the sleeve to chassis before attempting to adjust it, a high potential may develope on the sleeve due to capacity between the high voltage anode of the picture tube and the sleeve.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



IF = 455 KC AM

IF = 10.7 MC FM

θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V18	12AT7	†105VDC	0V	†.8VDC	6.3VAC	6.3VAC	†100VDC	†-.6VDC	0V	0V
V19	6BE6	†# 2.5VDC ▲+4.4VDC	0V	0V.	6.3VAC	†# 0V. ▲90VDC	100VDC	†-.9VDC ▲-.2VDC		
V20	6BA6	2VDC	0V	6.3VAC	0V.	100VDC	100VDC	.4VDC		
V21	6AU6	†-.5VDC	0V.	6.3VAC	0V.	†50VDC	150VDC	0V		
V22	6T8	† 4VDC	†-.9VDC	†-.6VDC	0V.	6.3VAC	▲-.6VDC	0V	.7VDC	90VDC
V23	6K6GT	0V	0V.	†225VDC	†310VDC	#-14VDC	0V.	6.3VAC	#0V	
V24	5Y3GT	0V	340VDC	0V	320VAC	0V	320VAC	0V.	340VDC	

TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V18	12AT7	63.3Ω	0Ω	330Ω	1Ω	1Ω	#91.2KΩ	560KΩ	0Ω	0Ω
V19	6BE6	22KΩ	3.2Ω	1Ω	2Ω	† 10KΩ ▲91.2KΩ	#220Ω	3.3 Meg		
V20	6BA6	3.5 Meg	0Ω	1Ω	0Ω	#220Ω	#220Ω	27Ω		
V21	6AU6	100KΩ	0Ω	1Ω	0Ω	#27KΩ	#27KΩ	0Ω		
V22	6T8	Inf.	15KΩ	Inf.	0Ω	1Ω	250KΩ	0Ω	10 Meg †45KΩ	†280KΩ
V23	6K6GT	Inf.	0Ω	†330Ω	†# 8KΩ	†280KΩ	Inf.	1Ω	▲45KΩ	
V24	5Y3GT	Inf.	50KΩ	Inf.	310Ω	Inf.	310Ω	Inf.	50KΩ	

† TAKEN IN "FM" POSITION
▲ TAKEN IN "AM" POSITION
MEASURED FROM PIN 8 OF V24
MEASURED FROM PIN 8 OF V23

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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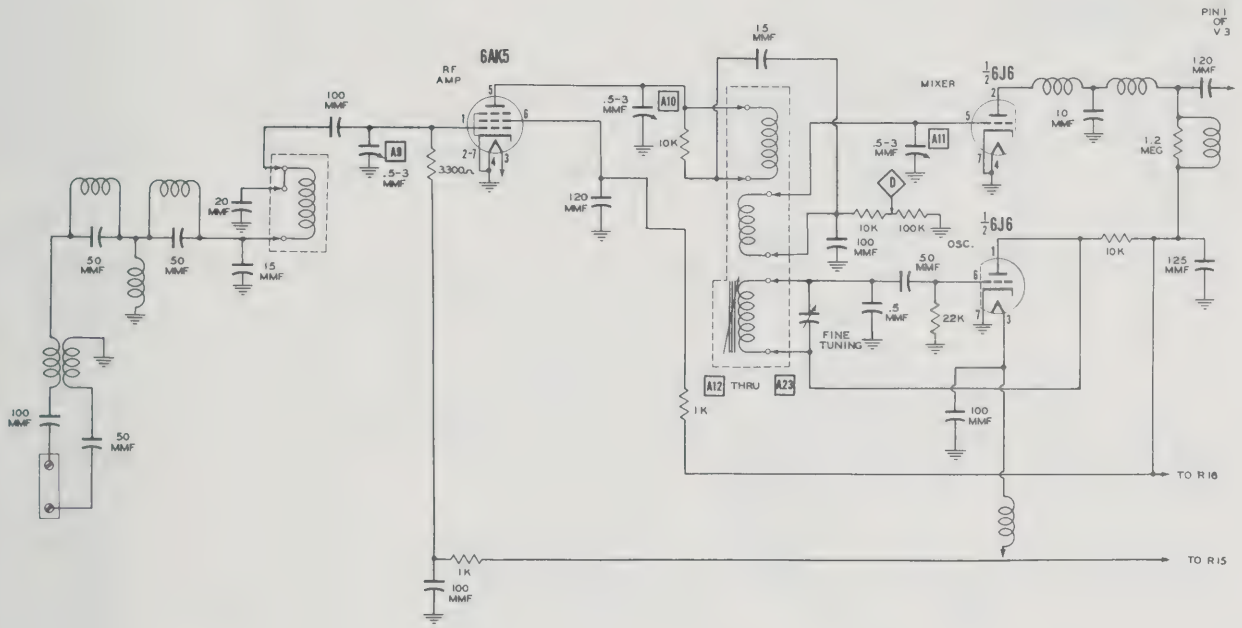
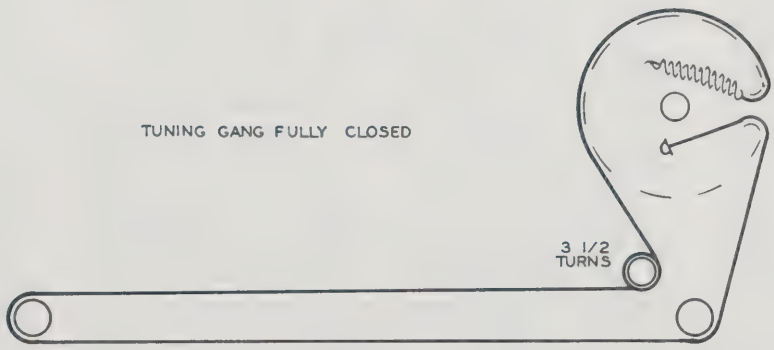
BENDIX MODELS 2051, 2060, 3051, 6001, 6003, 6090, 6100, 6920, 6990

RADIO SCHEMATIC



ALTERNATE TUNER # AR0T03



RADIO DIAL CORD STRINGING

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: BENDIX PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amp.	6AG5	6AG5	7BD	
B	RF Amp.	6CB6	6CB6	6CK	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6CB6	6CB6	6CK	
V4	2nd Video IF	6AU6	6AU6	7BK	
V5	Video Amp.	6AU6	6AU6	7BK	
V6	Sound IF Amp.	6AU6	6AU6	7BK	
V7	Ratio Det. - AF Amp.	6T8	6T8	9E	
V8	Audio Output	6AS5	6AS5	7CV	
V9	Sync. Limiter DC Rest	6AU6	6AU6	7BK	
V10	Sync. Clipper - Vert. Osc	6SN7GT	6SN7GT	8BD	
V11	Vert. Output	6K6GT	6K6GT	7S	
V12	Hor. AFC-Hor. Osc	6SN7GT	6SN7GT	8BD	
V13	Hor. Output	6BQ6GT	6BQ6GT	6AM	
V14	Damper	6W4GT	6W4GT	4CG	
V15	HV Rect	1B3GT	1B3GT	3C	
V16	LV Rect	5U4G	5U4G	5T	
V17A	Picture Tube	16KP4	16KP4	12D	
B	Picture Tube	16RP4	16RP4	12D	
C	Picture Tube	14CP4	14CP4	12D	
D	Picture Tube	14EP4	14EP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: BENDIX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	450	CE3A07	AF1683J		UPT84245		TVL-3743	▲ Filter
B	40	450							■ Decoupling
F	10	450							▲ Decoupling
C2A	40	450	CE3A06	AFH82J16E		UPT4145-820		TVL-3762	▲ Filter
E	10	450							■ Output Screen
C	100	200							▲ Decoupling
C3	10	50	CE1T10	PR350/10		BR105		TVA-1304	Stabilising Cap.
C4	2	50		PRS150/4		BBR3-50		TVA-1301	DC Res. Cath. Byp. *
C5	500			SI500	D6-501		GP2K-500	19C32	AGC Filter
C6	15			SI15	D6-150		GP1K-15	19C22	RF Coupling
C7	1000			BPD-001	D6-102		811-001	19C1	RF Decoupling
C8	.25				TCZ-.5				RF Coupling
C9	.5								RF Coupling
C10	1.8								RF Coupling
C11	470			SI470	D6-471		GP2K-470	19C15	RF Decoupling
C12	470			SI470	D6-471		GP2K-470	19C15	Conv. Grid Filter
C13	1.5			SIL.5NPO	TCZ-1.5		NPOK-1.5		Osc. Coupling
C14	10			SI10NPO	TCZ-10		NPOK-10	19C3	Osc. Grid Cap.
C15	3						N080K-3		Osc. Feedback
C16	10			SI10NPO	TCZ-10		NPOK-10	19C3	Fixed Trimmer
C17A	1000			BPD-2 x 001	DD-2-102		882-2 x 0015	29C7	RF Bypass
B	1000								Conv. Fil. Bypass
C18	100			SI100	D6-101	5WS1T1	GP1K-100	19C11	IF Coupling
C19A	1500		CC2T00	BPD-2 x 0015	DD-2-152	1WSD15	882-2 x 0015	29C6	AGC Filter
B	1500					1WSD15			1st V. IF Dec.
C20	68		CC6A32	SI68	D6-680	5WSQ7	GP1K-68	19C10	1st V. IF Fil.
C21	.2	200	CP2T56	P488-22		GT4P2		2TM-2	AGC Filter
C22A	1500		CC2T00	BPD-2 x 0015	DD-2-152	1WSD15	882-2 x 0015	29C6	2nd V.IF Dec.
B	1500					1WSD15			2nd V. IF Cath.
C23	5		CC6B00	SI5	TCZ-4.7	5RS5Y5	GP1K-5	MS-55	V. Diode Filter
C24	.05	200	CP2T40	P288-05	2TM-15	PTE4S5		2TM-15	Video Coupling
C25	.2	400	CP4T56	P488-22	4TM-2	GT4P2		4TM-2	Video Coupling
C26	11.5		CC9A12	SIL.5NPO	TCZ-11.5		NPOK-1.5		S. IF Coupling
C27	22		CC6A26	SI22	D6-220	5WSQ25	GP1K-22	19C23	S. IF Coupling
C28A	4000		CC2T01	BPD-2 x 004	DD-2-502	1DSD4	882-2 x 004	36C2	S. IF Decoupling
B	4000					1DSD4			S. IF Cathode
C29	1000	120	CPOM10	1468-001	D6-102	1WSD1	GP2L-001	1FM-21	Diode Load Cap.
C30	1000		CC9M50	SI1000	D6-102	1WSD1	GP2L-001	19C1	RF Bypass
C31	.002	600	CP6T12	P688-002	D6-202	PTE6D2	GP2M-002	6TM-22	De-emphasis
C32	.002	600	CP6T12	P688-002	D6-202	PTE6D2	GP2M-002	6TM-22	Audio Coupling
C33	.006	600	CP6T20	P688-006	D6-562	PTE6D6	811-005	6TM-26	Audio Coupling
C34	.006	600	CP6T20	P688-006	D6-562	PTE6D6	811-005	6TM-26	Output Plate
C35	.2	200	CP2T56	P488-22		GT4P2		2TM-2	Sync. Clipper Cath.
C36A	4000		CC2T01	BPD-2 x 004	DD-2-502	1DSD4	882-2 x 004	36C2	Integrator Net.
B	4000					1DSD4			Integrator Net.
C37	.05	200	CP2T40	P288-05	DF-503	PTE4S5		2TM-15	Vert. Sync. Coupling
C38	.05	400	CP4T40	P488-05	DF-503	PTE4S5		4TM-15	Vert. Sync. Coupling
C39	.05	400	CP4T40	P488-05	DF-503	PTE4S5		4TM-15	Vert. Osc. Feedback
C40	.03	800	CP6T36	P688-03		PTE6S3		6TM-13	Vert. Osc. Feedback
C41	2700	500	CM24A272K	SI2700	D6-272		GP2M-0027		Vert. Osc. Feedback
C42	1000	500	CP3S10	1468-001	D6-102	1WSD1	GP2L-001	1FM-21	Vert. Osc. Grid
C43	.2	200	CP2T56	P488-22		GT4P2		2TM-2	Fixed Trimmer
C44	.003	600	CP6T14	P688-003	D6-302	PTE6D3	GP2M-003	6TM-23	Vert. Sweep Coupling
C45	47	500	CC6A32	1468-00005	D6-470	5WSQ6	GP1K-47	1FM-45	Hor. Sync. Coupling
C46	.05	400	CP4T40	P488-05	DF-503	PTE4S5		4TM-15	Hor. AFC Plate
C47	.2	200	CP2T56	P488-22		GT4P2		2TM-2	AFC Filter
C48	.02	600	CP2T34	P688-02	D6-203	PTE6S2		6TM-12	AFC Filter
C49	220	500	CM22C221K	1468-00025	D6-221	5WST25	GP2K-220	1FM-325	Hor. Osc. Grid
C50	27		CC6B27	SI27	D6-270	5WSQ25	GP1K-27	19C27	Hor. AFC Coupling
C51	1200	500	CM24A122K	SI1200	D6-122		GP2L-0012		Hor. Discharge
C52	470	500	CM22A471K	1468-0005	D6-471	5WST5	GP2K-470	1FM-35	Hor. Sweep Coupling
C53	100	500	CM22C101J	1468-0001	D6-101	5WST1	GP1K-100	1FM-31	Hor. Feedback
C54	.05	400	CP4T40	P488-05	DF-503	PTE4S5		4TM-15	Hor. Sweep Feedback
C55	.2	200	CP2T56	P488-22		GT4P2		2TM-2	Hor. Output Cath.
C56	.2	200	CP2T56	P488-22		GT4P2		2TM-2	Damper Filter
C57	.5	200	CP2T65	P288-5		GT2P5		2TM-5	Hor. Sweep Coupling
C58	.00047	10000	CP9T08	P10000-0005				TVM-351	HV Filter
C59	.05	400	CP4T40	P488-05	DF-503	PTE4S5		4TM-15	Sync. Coupling

* Some models use .2MFD in this application. Mfgr's Part No. CP2T56.

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BENDIX PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	100KΩ	½	RVOD02		RTV-156	SBB-618	Contrast control, front
B	100KΩ	½					Horiz. hold control-rear
R2A	Switch		RVOS04				TV-Off-Radio switch-front } See note 1
B	500KΩ	½					Volume control-rear }
R2A	500KΩ	½	RVOS03	QI3-133	AG-60-Z	B-60-S	Volume control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R2A per instructions } See Note 2
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R2A per instructions }
R3A	50KΩ	½	RVOC12	QI1-123	AM-44-S	AN-31	Brightness control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R3A per instructions
R4A	600KΩ	½	RV4C11		AG-58-S	B-4	Vert. linearity control
B	Shaft		Not Req.		FKS-1/4		Attach to R4A per instructions
R5A	3 Meg.	½	RV4C07	QI1-140	AG-84-S	AN-84	Height control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	2 Meg.	½	RV4C10	QI1-139	AG-83-S	AN-75	Vert. hold control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R6A per instructions
R7	2500Ω	4	RVOW04		RTV-183	VK-132	Focus control-Wire Wound

Note 1. Used in combination models only.
Note 2. Used in "TV only" models.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: BENDIX PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R8	4700Ω	½	RC22A472K	BTS-4700	RF Coil Shunt-See Note 3
R9	2200Ω 20%	½	RC22A222M	BTS-2200	RF Amp. Grid
R10	2200Ω	½	RC22A222K	BTS-2200	RF Amp. Decoupling
R11	220KΩ 20%	½	RC22A224M		Conv. Grid
R12	22KΩ 20%	½	RC22A223M		Osc. Grid
R13	15KΩ 20%	½	RC22A153M		Conv. Plate
R14	4700Ω	½	RC22A472K	BTS-4700	Osc. Plate
R15	680Ω 20%	½	RC22A681M	BTS-680	AGC Network
R16	150Ω 20%	½	RC22A151M	BTS-150	Decoupling
R17	33KΩ	½	RC22A333K		1st Video IF Amp. Grid
R18	56Ω	½	RC22A560K		1st Video IF Amp. Cathode
R19	680Ω 20%	2	RC22A681M	BTS-680	AGC Network
R20	100Ω 20%	1	RC24A101M	BTA-100	1st Video IF Amp. Decoupling
R21	10KΩ	½	RC22A103K		2nd Video IF Amp. Grid
R22	82Ω	½	RC22A82uK	BTS-82	2nd Video IF Amp. Cathode
R23	1.5 Meg. 20%	½	RC22A155M	BTS-1.5 Meg.	AGC Network-See Note 4
R24	5600Ω	½	RC22A562K	BTS-5600	Video Det. Load
R25	1.2 Meg.	½	RC22A125K	BTS-1.2 Meg.	Video Amp. Grid-See Note 5
R26	6800Ω	2	RC25A682K	BTB-6800	Video Amp. Plate
R27	47KΩ	½	RC22A473K	BTS-47K	Isolation
R28	100KΩ 20%	½	RC22A104M	BTS-100K	Voltage Divider
R29	47KΩ 20%	½	RC22A473M		Sound IF Amp. Grid
R30	680Ω 20%	½	RC22A681M	BTS-680	Sound IF Amp. Decoupling
R31	4700Ω	1	RC24A472K	BTA-4700	Sound IF Amp. Decoupling
R32	12KΩ	½	RC22A123K	BTS-12K	Ratio Det. Diode Load
R33	33Ω 20%	1	RC24A330M		Balancing
R34	47KΩ	½	RC22A473K	BTS-47K	De-emphasis
R35	10 Meg. 20%	½	RC22A106M	BTS-10 Meg.	AF Amp. Grid
R36	10Ω 20%	½	RC22A100M	BW-½-10	AF Amp. Cathode
R37	82KΩ	1	RC24A823K	BTA-82K	AF Amp. Plate
R38	6800Ω 20%	½	RC22A682M	BTS-6800	Audio Output Screen
R39	47Ω 20%	1	RC22A470M	BW-½-47	Feedback
R40	2.2 Meg. 20%	½	RC22A225M	BTS-2.2 Meg.	Sync. Limiter Grid
R41	22KΩ 20%	2	RC25A223M	BTB-22K	Sync. Limiter Cathode
R42	22KΩ 20%	1	RC24A223M	BTA-22K	Sync. Limiter Cathode
R43	47KΩ 20%	½	RC22A473M	BTS-47K	Sync. Limiter Plate
R44	330KΩ 20%	½	RC22A334M	BTS-330K	Picture Tube Grid
R45	100KΩ	½	RC22A104K	BTS-100K	Sync. Clipper Grid
R46	10KΩ	½	RC22A103K	BTS-10K	Sync. Clipper Cathode
R47	12KΩ	½	RC22A123K	BTS-12K	Sync. Clipper Cathode
R48	2700Ω 20%	1	RC22A272M	BTS-2700	Sync. Clipper Plate
R49	39KΩ	½	RC22A393K	BTS-39K	Integrator
R50	15KΩ	½	RC22A153K	BTS-15K	Integrator
R51	8200Ω	½	RC22A822K	BTS-8200	Differentiator
R52	2.2 Meg. 20%	½	RC22A225M	BTS-2.2 Meg.	Vert. Output Grid
R53	68KΩ 20%	½	RC22A683M	BTS-68K	Feedback
R54	33KΩ 5%	½	RC22A333J	BTS-33K-5%	Vert. Peaking
R55	680KΩ 20%	½	RC22A684M	BTS-680K	Vert. Osc. Plate
R56	390KΩ	½	RC22A394K	BTS-390K	Voltage Divider
R57	560KΩ	½	RC22A564K	BTS-560K	Horiz. AFC Grid
R58	180KΩ	½	RC22A184K	BTS-180K	Horiz. AFC Cathode
R59	100KΩ 20%	½	RC22A104M	BTS-100K	Horiz. AFC Cathode
R60	8200Ω	½	RC22A822K	BTS-8200	Horiz. AFC Filter Network
R61	330KΩ 20%	½	RC22A334M	BTS-330K	Voltage Divider
R62	120KΩ	½	RC22A124K	BTS-120K	Voltage Divider
R63	3.3 Meg. 20%	½	RC22A335M	BTS-3.3 Meg.	Voltage Divider
R64	180KΩ	½	RC22A184K	BTS-180K	Horiz. Osc. Grid
R65	6800Ω	½	RC22A682K	BTS-6800	Horiz. Osc. Transformer Shunt
R66	120KΩ	½	RC22A124K	BTS-120K	Horiz. Osc. Plate
R67	560KΩ	½	RC22A564K	BTS-560K	Horiz. Output Grid-See Note 4
R68	470Ω	2	RC25A471K	BTB-470	Horiz. Output Cathode
R69	470Ω	2	RC25A471K	BTB-470	Horiz. Output Cathode
R70	4700Ω	2	RC25A472K	BTB-4700	Horiz. Output Screen
R71	4700Ω	2	RC25A472K	BTB-4700	Horiz. Output Screen
R72	10KΩ 20%	½	RC22A103M	BTS-10K	Filter
R73	2200Ω 20%	2	RC25A222M	BTB-2200	Vert. Output Decoupling
R74	6800Ω	2	RC25A684K		HV Filter
R75	680KΩ	2	RC25A684K		HV Filter
R76	470Ω	2	RC25A471K	BTB-470	Focus Coil Shunt
R77	22Ω 20%	½	RC22A22M	BW-½-22	Centering Network
R78	220KΩ 20%	1	RC24A224M	BTA-220K	Line Isolation

Note 3. Not used in all models.
Note 4. Some models use a 470KΩ resistor in this application.
Note 5. Some models use a 1 Meg. resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: BENDIX PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ⓖ 1.5A	650VCT .160ADC	5VAC ⓖ 3A	6.3VAC ⓖ 1.2A SEC. 4 6.3VAC ⓖ 7.2A	TPOY02	P-8160 ⑤ P-6134 ⑥		TP-370 ⑤

⑤ Drill new mounting holes.
⑥ Mount on chassis and use for SEC. #3.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: BENDIX PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	415Ω Tap ⓖ 110Ω	110 Tap ⓖ 1.5Ω, 8Ω SEC. 2 0Ω	TSOH03		HVO-6		Hor. Output Trans.
T3	660Ω	11.8Ω	TSOV02	A-8112	A-3036	TSO-5 ①	Vert. Output Trans.
T4A	14Ω		LCOD05	DY-7	MD-70F		Hor. Deflection Coil
B	66Ω						Vert. Deflection Coil
T5	400Ω		LCOF04		MF-2		Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: BENDIX PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	3400Ω	3.5Ω	385Ω	.6Ω	TA0026	A-3850	A-2930	RO-6 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: FIELD RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: BENDIX PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1A	PM	3.5Ω	SPOR02	10J12	10A4A	
B	PM		SPBR02	829	8A31	
C	PM		SP4003	46J6	46A1	
	CONE DIA.	V. C. DIA.				
SP2A	9 3/4"	1"				
B	7 3/4"					
C	4" x 6"					

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: BENDIX PART No.	MEISSNER PART No.	IRC PART No.	NOTES
L1	Ant. Coil	*		†			* .3Ω across antenna terminals.
L2	Ant. Coil	*		†			
L3	RF Coil	0Ω		†			
L4	Osc. Coil	0Ω		†			
L5	Osc. Coil	0Ω		†			
L6	Fil. Choke	.2Ω		†		CLA-.47	.47 microhenries
L7	1st Video IF	.5Ω		†			
L8	2nd Video IF	.3Ω	.3Ω	T10I06			
L9	3rd Video IF	.3Ω	.3Ω	T10D26			
L10	Peaking	17Ω		LCOV04			Wound on 220KΩ resistor, yellow dot
L11	Peaking	11Ω		LCOV06			Wound on 15KΩ resistor, black dot
L12	Peaking	11Ω		LCOV06			Wound on 15KΩ resistor, black dot
L13	Peaking	13Ω		LCOV07			Wound on 220KΩ resistor, white dot
L14	Sound IF	13Ω		L10T14			Tap at 9Ω
L15	Ratio Det. Trans.	6Ω	.6Ω	T10D25			
L16	Syncroguide Trans.	90Ω					Tap at 65Ω

† Part of tuner Part No. AROT05 (Type 2)

SELENIUM RECTIFIER

ITEM No.	RATING: CURRENT	REPLACEMENT DATA: BENDIX PART No.	SYLVANIA PART No.	SELETRON PART No.	NOTES
M1	.045ADC	QRO502		1M1	

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M2	RF Tuner	AR0T05 (Type 2)	
M3	Fuse	FC0M03	.15A 250V Type MDL
M4	Crystal		1N60 Video Det.
M5	Ion Trap	T10P02	
M6	Switch	SSIC03	Phono Models 2051, 3051, 6001, 6003
	Safety Glass.	GZ0S06	Model 6100
	Safety Glass	GZ0S05	Models 6001, 6003
	Safety Glass	GZ0304	Models 2051, 3051
	Cabinet	ZW1V12	Model 6100 Console combination mahogany
	Cabinet	ZW1V15	Model 6003 Console without doors mahogany
	Cabinet	ZW1V14	Model 6001 Console with doors mahogany
	Cabinet	ZW1V16	Model 3051 Console mahogany
	Cabinet	ZW1T08	Model 2051 Table mahogany
	Dial Glass	D80C17	540-1620KC, 88-108MC Model 6100
	Knob	KB0B07	Channel selector
	Knob	KC0B35	Fine tuning
	Knob	KC0B31	Model 6100 contrast, radio tone, radio-off-TV
	Knob	KC0B31	Contrast models 2051, 3051, 6001, 6003
	Knob	KC0B30	Off-Volume models 2051, 3051, 6001, 6003
	Knob	KC0B32	Horiz. hold models 2051, 3051, 6001, 6003
	Knob	KC0B32	Horiz. hold, radio volume, TV volume model 6100
	Knob	KC0B33	Radio tuning model 6100
	Knob	KC0B34	Radio bandswitch model 6100
	Knob	HK0R19	Door pull model 6100
	Knob	HK0T00	Tray pull model 6100

BENDIX MODELS 2051, 2060, 3051, 6001, 6003, 6090, 6100, 6920, 6990

RADIO **PARTS LIST AND DESCRIPTIONS**

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		BENDIX PART No.	STANDARD REPLACEMENT		
V18	FM RF Amp. -FM Mixer	12AT7	12AT7	9A	
V19	FM Osc. -AM Conv.	6BE6	6BE6	7CH	
V20	1st FM-AM IF Amp.	6BA6	6BA6	7BK	
V21	2nd FM IF Amp.	6AU6	6AU6	7BK	
V22	Ratio Det. -DET. -AVC-AF Amp.	6T8	6T8	9E	
V23	Power Output	6K6GT	6K6GT	7S	
V24	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	BENDIX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C60A	40	450	CE3A06	AFH82J16E		UPT4145-820		TVL-3762	▲ Filter
B	10	450							■ Filter
C	100	200							▲ Decoupling
C61	5	50	CE1T06	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C62	100	500	CM22A101M	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Ant. Coupling
C63	470		CC9M42	SI470	D6-471	5W5T5	GP2K-470	19C15	FM RF Cath.
C64	100		CC9A34	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
C65	100		CC9A34	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
C66	100	500	CM22A101M	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	FM RF Fil.
C67	3.3		CC9A16	SI3.3NPO	TCZ-3.3		NPOK-3.3		Osc. Coupling
C68	.006	600	CP6T20	P688-006	D6-562	PTE6D6	811-01	6TM-26	Decoupling
C69	.05	200	CP2T40	P288-05	DF-503	PTE4S5		2TM-15	AVC Filter
C70	33		CC8B28	SI33	D6-330	5W5Q4	GP1K-33	19C24	Osc. Grid Cap.
C71	2.2		CC9A14		TCZ-2.2				Osc. Feedback
C72	8.2		CC7S21				N470K-8.2		Fixed Trimmer
C73	10000		CC9R80	BPD-01	DD-103	PTE4S1	811-01	36C2	Osc. Anode Bypass
C74	.006	600	CP6T20	P688-006	D6-562	PTE6D6	811-01	6TM-26	Conv. Plate Dec.
C75	100		CC9A34	SI100	D6-101	5W5T1	GP1K-100	19C11	Conv. Plate Dec.
C76	.006	600	CP6T20	P688-006	D6-562	PTE6D6	811-01	6TM-26	AVC Filter
C77	.006	600	CP6T20	P688-006	D6-562	PTE6D6	811-01	6TM-26	1st IF Decoupling
C78	18	500	CM6S16		TCZ-18		NPOK-18		Fixed Trimmer
C79	22	500	CM22A220M	SI22	D6-220	5W5Q25	GP1K-22	19C23	IF Coupling
C80	.006	600	CP6T20	P688-006	D6-562	PTE6D6	811-01	6TM-26	2nd IF Decoupling
C81	1000		CC9M50	SI1000	D6-102	1W5D1	GP2L-001	19C1	RF Bypass
C82	100	500	CM22A101M	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	Diode Load Cap.
C83	.002	600	CP6T12	P688-002	D6-202	PTE6D2	GP2M-002	6TM-22	De-emphasis
C84	.006	600	CP6T20	P688-006	D6-562	PTE6D6	811-005	6TM-26	Audio Coupling
C85	.002	600	CP6T12	P688-002	D6-202	PTE6D2	GP2M-002	6TM-22	Tone Compensation
C86	.006	600	CP6T20	P688-006	D6-562	PTE6D6	811-005	6TM-26	Audio Coupling
C87	.006	600	CP6T20	P688-006	D6-562	PTE6D6	811-005	6TM-26	Tone Compensation
C88	.006	600	CP6T20	P688-006	D6-562	PTE6D6	811-005	6TM-26	Filament Bypass
C89	.006	600	CP6T20	P688-006	D6-562	PTE6D6	811-005	6TM-26	Output Plate

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R79A	15 Meg.	$\frac{1}{2}$	RV4D01			SBBT-534	Tone control-front (4 Meg. control min.)
B	2 Meg.	$\frac{1}{2}$					Volume control-rear-tapped at 1 Meg.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	BENDIX PART No.	IRC PART No.	
R80	220Ω	$\frac{1}{2}$	RC22A221M	BTS-220	FM RF Amp. Cathode
R81	560KΩ	$\frac{1}{2}$	RC22A564M	BTS-560	FM Mixer Grid-See Note 6
R82	22KΩ	$\frac{1}{2}$	RC22A223M	BTS-22K	Osc. Grid
R83	47Ω	$\frac{1}{2}$	RC22A470M		Parasitic Suppressor
R84	1000Ω	$\frac{1}{2}$	RC22A102M	BTS-1000	Plate Decoupling
R85	220Ω	$\frac{1}{2}$	RC22A221M	BTS-220	Decoupling
R86	10KΩ	2	RC25A103M	BTB-10K	Voltage Divider
R87	3.3 Meg.	$\frac{1}{2}$	RC22A335M	BTS-3.3 Meg.	AVC Network
R88	3.3 Meg.	$\frac{1}{2}$	RC22A335M	BTS-3.3Meg.	AVC Network
R89	27Ω	$\frac{1}{2}$	RC22A270K		FM-AM IF Amp. Cathode
R90	220Ω	$\frac{1}{2}$	RC22A221M	BTS-220	FM-AM IF Amp. Decoupling
R91	100KΩ	$\frac{1}{2}$	RC22A104M	BTS-100K	Limiter Grid
R92	27KΩ	$\frac{1}{2}$	RC22A273K	BTS-27K	Limiter Decoupling
R93	15KΩ	$\frac{1}{2}$	RC22A153M	BTS-15K	Ratio Det. Diode Load
R94	68Ω	$\frac{1}{2}$	RC22A680M	BW-$\frac{1}{2}$-68	Balancing
R95	33KΩ	$\frac{1}{2}$	RC22A333M	BTS-33K	De-emphasis
R96	220KΩ	$\frac{1}{2}$	RC22A224M	BTS-220K	Det. Diode Load
R97	33KΩ	$\frac{1}{2}$	RC22A333M	BTS-33K	Diode Filter
R98	100KΩ	$\frac{1}{2}$	RC22A104M	BTS-100K	Tone Compensation
R99	150KΩ	$\frac{1}{2}$	RC22A154M	BTS-150K	Tone Compensation
R100	10 Meg.	$\frac{1}{2}$	RC22A106M	BTS-10 Meg.	AF Amp. Grid
R101	270KΩ	$\frac{1}{2}$	RC22A274K	BTS-270K	AF Amp. Plate
R102	6800Ω	1	RC24A682M	BTA-6800	Filter

Note 6. Some models use a 470KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	BENDIX PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T7	117VAC ⓐ .47A	600VCT .050ADC	5VAC ⓐ 2A	6.3VAC ⓐ 3A	TPOH03	P-6119 ⑤	P-2951 ⑤	

⑤ Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BENDIX PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T8	7500Ω	3.5Ω	530Ω	.5Ω	TA0025	A-3877	A-3930	RO-13	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	BENDIX PART No.	MEISSNER PART No.	IRC PART No.	
L17	FM Ant. Loading Coil	.1Ω		LAOF02			Wound on 1.5KΩ resistance.
L18	RF Choke	3.2Ω		LFOA12		CLA-3.3	3.3 microhenries
L19	FM RF Coil	0Ω		L10F02			
L20	FM Osc. Coil	0Ω		L07F01			
L21	Loop Ant.	1.2Ω					
L22	AM Ant. Loading Coil	0Ω		LFOA11			
L23	RF Choke	2.7Ω		LFOA13			2 microhenries
L24	AM Osc. Coil	.5Ω	6.4Ω	T00B00	14-1073		
L25	1st AM IF	16Ω	16Ω	T10C14	16-6758		
L26	1st FM IF	.6Ω	.6Ω	T10C15	16-3487		
L27	2nd AM IF	8.5Ω	8.5Ω	T10D27	16-6758		
L28	2nd FM IF	.2Ω		L10F03	16-3487		
L29	Ratio Det. Trans.	1.4Ω	.1Ω	TROR00	17-3487		
L30	Fil. Choke	.1Ω		LFOA00			
L31	Fil. Choke	.1Ω		LFOA00			

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA					REMARKS
	BENDIX PART No.	ASTATIC PART No.		SHURE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M7		AC-AG-J	A-AG	W26B	A66U	

ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					BENDIX PART No.		
M8	Bayonet	6-8	.15	Blue	#44		Type #44
M9	Bayonet	6-8	.15	Blue	#44		Type #44
M10	Bayonet	6-8	.15	Blue	#44		Type #44 (Jewel light)

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M11	Switch	SR3D00	Function Phono-AM-FM
M12	Tuning Cap.	CV0F00	(15-494MMF, 22-220MMF)

EMERSON
MODEL 634B (Ch. 120097B)

EMERSON
MODEL 634B (Ch. 120097B)

EMERSON MODEL 634B

TRADE NAME	Emerson, Model 634B (Ch. 120097B)
MANUFACTURER	Emerson Radio and Phonograph Corp., 111 8th Ave., New York 11, New York
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amp., 12AT6 DET-AVC-AF, 50B5 Power Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC — RATING .25 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set pointer to last reference mark at low frequency end of dial backplate.

Turn PHONO-RADIO switch to "RADIO" position (counter-clockwise).

Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of the signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (Grid) of 12BE6 (V1). Low side to chassis.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	"	A6	"

FOR SERVICE INFORMATION ON RECORD CHANGER SEE MISCELLANEOUS SERIES 700F 33/45 PHOTOFACT SET #75 FOLDER #11

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

EMERSON MODEL 634B

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	800525	12BE6	7CH	
V2	IF Amp.	800524	12BA6	7BK	
V3	DET.-AVC-AF	800523	12AT6	7BT	
V4	Power Output	800527	50B5	7BZ	
V5	Rectifier	800526	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	925163	PRS150/50-50		EDL5515		TVA-2453	Filter-Red
B	50	150							Filter-Green
C2	.1	200	920040	P288-1	DF-104	PTE4P1		2TM-P1	AVC Filter
C3	.05	400	923105	P488-05	DF-503	PTE4S5		4TM-S5	Phono Isolation
C4A	220		470310	SI220	D6-221	5W5T25	GP2K-220		Diode RF Filter
B	2000			BPD-002	DD-202	PTE6D2	811-002	34C3	Audio Coupling
C	220			SI220	D6-221	5W5T25	GP2K-220		AF Amp. Plate
D	5000			BPD-005	DD-502	PTE6D5	811-005		Audio Coupling
C5	.01	400	923104	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Output Plate Byp.
C6	.05	400	920030	P488-05	DF-503	PTE4S5		4TM-S5	Tone Comp.
C7	.05	400	920030	P488-05	DF-503	PTE4S5		72P51	Line Isolation
C8	.05	400	920030	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter
C9	2.2			SI3NPO	TCZ-2.2		NPOK-3		Ext. Ant. Coupling

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	Switch		510069-1				Radio and Phono switch-front
B	500KΩ	½					Volume control and switch-rear

RESISTORS

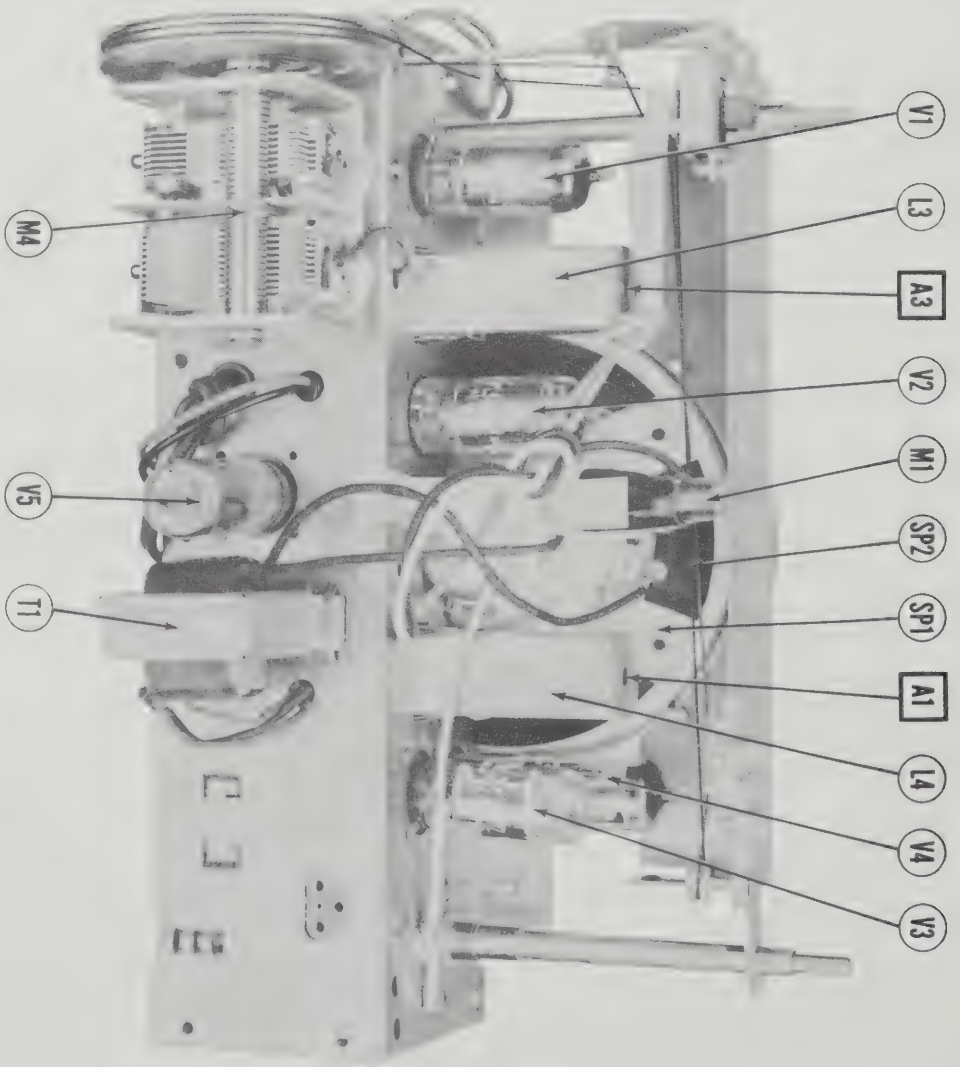
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	340810	BTS-22K	Osc. Grid
R3	15 Meg.	½	351490	BTS-15 Meg.	AVC Network-See Note 1
R4	3.3 Meg.	½	351330	BTS-3.3 Meg.	AVC Network
R5	120Ω	½	340270	BTS-120	IF Cathode
R6	10 Meg.	½	351490	BTS-15 Meg.	AF Grid-See Note 2
R7	470KΩ	½	351130	BTS-470K	AF Plate
R8	470KΩ	½	351130	BTS-470K	Output Grid
R9	150Ω	½	340290	BTS-150	Output Cathode
R10	1000Ω	1	370490	BTA-1000	Filter
R11	39Ω	1	370150		Rect. Ballast

Note 1. Not used in all models.
Note 2. Some models use a 15 Meg. resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2200Ω	3.9Ω	255Ω Tap ⓐ 4.8Ω	.5Ω	734055	A-3330 ①	A-3031 ①	RO-3 ①	① Drill one new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA EMERSON PART No.	JENSEN PART No.	QUAM PART No	INSTALLATION NOTES
	FIELD	V. C. IMP.				
SP1	PM	3.9Ω	180052			
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA EMERSON PART No.	REPLACEMENT DATA MEISSNER PART No.
L1	Loop Ant.	3.6Ω		700047	
L2	Osc. Coil	1Ω	10.5Ω	716044	14-1073
L3	1st IF	21Ω	21Ω	720055	16-6758
L4	2nd IF	21Ω	21Ω	720055	16-6758

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA EMERSON PART No.		NOTES
M1	Bayonet	6-8	.15	Brown	807000		Type #47

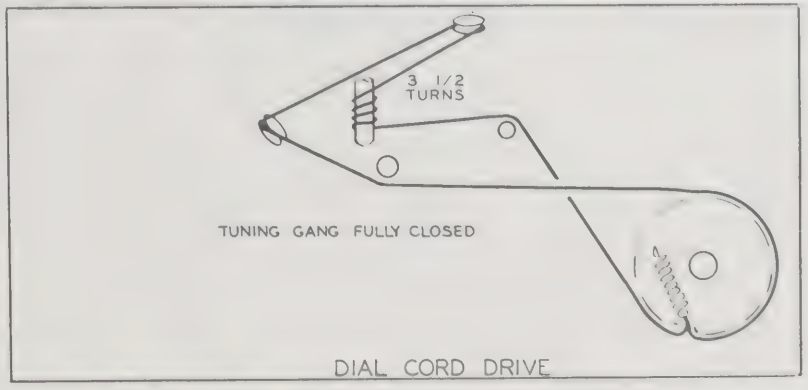
PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA EMERSON PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No CARTRIDGE	SHURE PART No NEEDLE	REMARKS
M2		GC-AGM	G-AG			

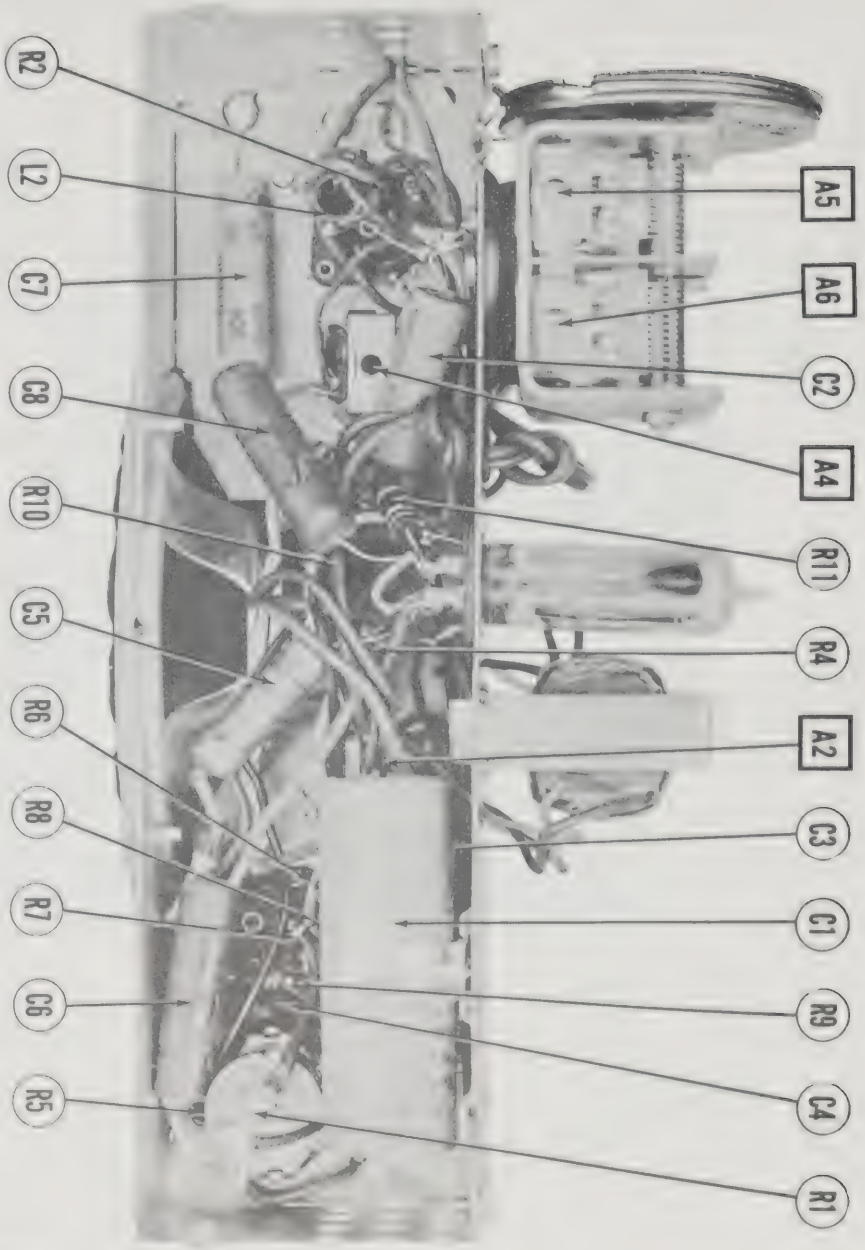
ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

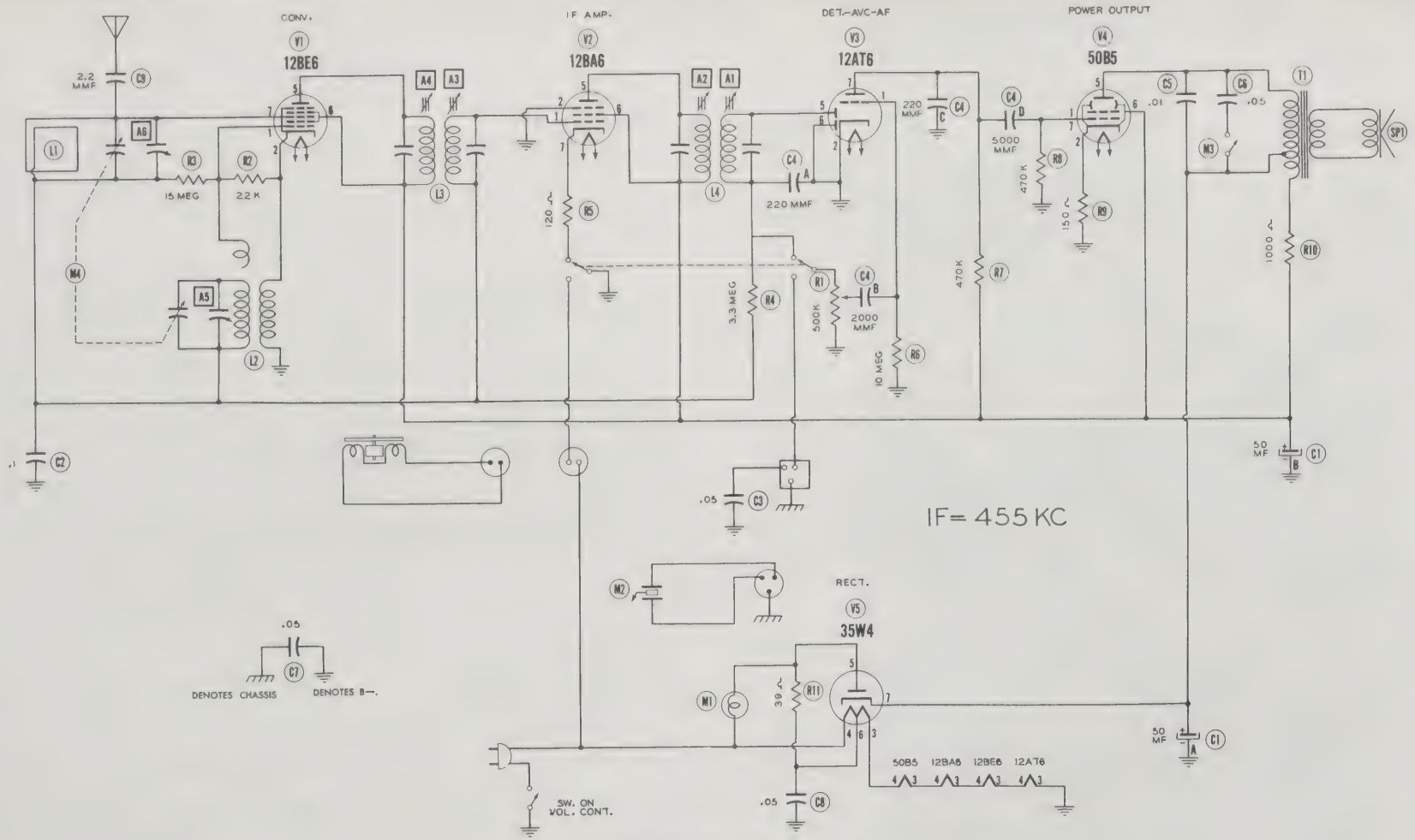
MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M3	Switch	510068	Tone
M4	2 Gang Var. Cap.	900066	(21-407MMF, 31-187MMF)
	Dial Glass	520115-1	
	Knob	450041S	Tuning-On/Off
	Knob	450064	Tone
	Knob	450063	Radio-Phono



CHASSIS—BOTTOM VIEW





RADIO-PHONO SWITCH IN RADIO POSITION

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	6.6VDC	0V	12VAC	24VAC	90VDC	90VDC	-.2VDC
V 2	12BA6	0V	0V	24VAC	36VAC	90VDC	90VDC	1.4VDC
V 3	12AT6	-.6VDC	0V	0V	12VAC	-.5VDC	0V	40VDC
V 4	50B5	0V	6.2VDC	36VAC	85VAC	100VDC	90VDC	0V
V 5	35W4	110VDC	-.2VDC	85VAC	117VAC	105VAC	110VAC	110VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	16Ω	30Ω	†1KΩ	†1KΩ	3.8 Meg.
V 2	12BA6	21Ω	0Ω	30Ω	40Ω	†1KΩ	†1KΩ	120Ω
V 3	12AT6	10 Meg.	0Ω	0Ω	16Ω	500KΩ	0Ω	†470KΩ
V 4	50B5	470KΩ	150Ω	40Ω	100Ω	†250Ω	†1KΩ	470KΩ
V 5	35W4	†6Ω	3 Meg.	100Ω	140Ω	175Ω	135Ω	90KΩ

† MEASURED FROM PIN 7 OF V5

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

EMERSON MODELS 656B, 657B (Ch. 120122B) (BATTERY-LINE OPERATED)

EMERSON MODELS 656B, 657B (Ch. 120122B) (BATTERY-LINE OPERATED)

EMERSON MODELS 656B, 657B (Ch. 120122B) (BATTERY-LINE OPERATED)

TRADE NAME	Emerson, Models 656B, 657B (Ch. 120122B)
MANUFACTURER	Emerson Radio and Phonograph Corp., 111 8th Ave., New York 11, New York
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES(SIX)	Types 1U4 RF Amp., 1R5 Converter, 1U4 IF Amp., 1U5 DET-AVC-AF, 3V4 Power Output, 117Z3 Rectifier
POWER SUPPLY	105-125 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply in Pack Form
RATING	.15 Amp. at 117 Volts AC or 53MA at 9 Volts DC and 14MA at 90 Volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap fully closed and set pointer to last reference mark at low frequency end of dial.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid) of 1R5 (V2). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce hum modulation.
2.	.1MFD	"	1650KC	"	"	A5	"
3.		Loop	1400KC	Tune for max. output	"	A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		Loop	600KC	"	"	A8	Adjust for maximum output. Repeat steps 2, 3 and 4 until no further improvement can be made.

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PARTS LIST AND DESCRIPTIONS

EMERSON
MODELS 656B, 657B

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amp.	800017	1U4	6AR	
V2	Converter	800110	1R5	7AT	
V3	IF Amp.	800017	1U4	6AR	
V4	DET.-AVC-AF	800019	1U5	6BW	
V5	Power Output	800018	3V4	6BX	
V6	Rectifier	800013	117Z3	4CB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	150	925183			UP44415C		TVL-2442	▪ Filter
						10		TVA-1162	
B	30	150				BRHI525A			■ Filter
C	300	15							▲ Filament Bypass
C2	2.2				TCZ-2.2		NPOK-3		Ant. Coupling
C3	220	500	928104	1468-00025	D6-221	5W5T25	GP2K-220	1FM-325	RF Coupling
C4	.05	200	920060	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C5	.05	200	920060	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C6	.05	200	920060	P288-05	DF-503	PTE4S5		2TM-S5	Osc. Anode Dec.
C7	.1	200	920040	P288-1	DF-104	PTE4P1		2TM-P1	Filament Bypass
C8	.01	200	920092	P488-01	D6-103	PTE4S1	811-01	4TM-S1	IF Grid Filter
C9	.1	200	920040	P288-1	DF-104	PTE4P1		2TM-P1	Filament Bypass
C10A	1000		923022	BPD-001	DD-102	PTE6D1	811-001	19C1	Audio Coupling
B	10000			BPD-01	DD-103	PTE4S1	811-01	36C1	AF Amp. Screen
C	100			S1100	D6-101	5W5T1	GP1K-100	19C11	AF Amp. Plate
D	1000			BPD-001	DD-102	PTE6D1	811-001	19C1	Audio Coupling
C11	.005	400	920180	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Output Plate Byp.
C12	.1	200	920040	P288-1	DF-104	PTE4P1		2TM-P1	Filament Bypass
C13	.05	400	920539	P488-05	DF-503	PTE4S5		72P51	Line Isolation
C14	.05	400	920539	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

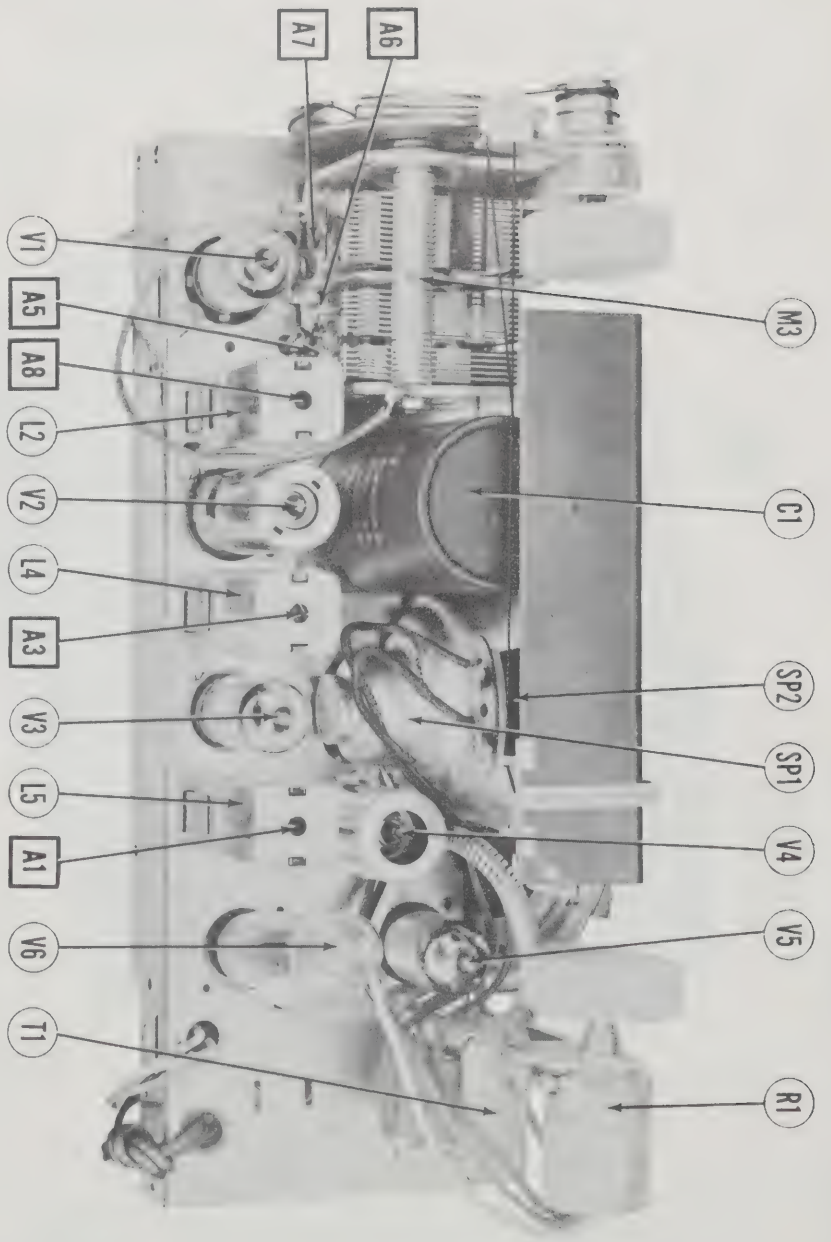
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA:	INSTALLATION NOTES
R1A	1 Meg.	½	390063	Q13-133	AG-63-Z	B-70-S	Volume control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-2	SWB-2	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R2	3.3 Meg.	½	351330	BTS-3.3 Meg.	RF Grid
R3	3.3 Meg.	½	351330	BTS-3.3 Meg.	AVC Network
R4	3.3 Meg.	½	351330	BTS-3.3 Meg.	AVC Network
R5	100KΩ	½	350970	BTS-100K	Osc. Grid
R6	15KΩ	½	340770	BTS-15K	Osc. Anode
R7	3.3 Meg.	½	351330	BTS-3.3 Meg.	IF Grid
R8	47KΩ	½	340890	BTS-47K	Diode Filter
R9	10 Meg.	½	351450	BTS-10 Meg.	AF Grid
R10	4.7 Meg.	½	351370	BTS-4.7 Meg.	AF Screen
R11	1 Meg.	½	341210	BTS-1 Meg.	AF Plate
R12	3.3 Meg.	½	351330	BTS-3.3 Meg.	Output Grid
R13	39Ω	1	370152		Surge Limiter
R14	1500Ω	½	340532	BTS-1500	Filter
R15	2200Ω	10	394099		Filament Dropping-Wire Wound
R16	2200Ω	½	340572	BTS-2200	Filament String
R17	1000Ω	½	340492	BTS-1000	Filament String
R18	330Ω	½	340372	BTS-330	Filament String
R19	1500Ω	½	340532	BTS-1500	Filament String

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	9300Ω	3.9Ω	440Ω	.4Ω	734039A	A-3329 ①	A-2932 ①	RO-16 ①	① Bend one mounting tab down and mount in original holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			EMERSON PART No.	JENSEN PART No.	QUAM PART No.	
	FIELD	V. C. IMP.				
SP1	PM	3.9Ω	180052			
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

R F COILS

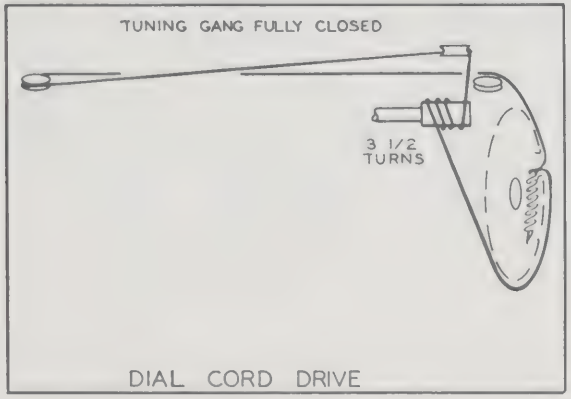
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	EMERSON PART No.	MEISSNER PART No.	
L1	Loop Ant.	3Ω		700042		
L2	RF Trans.	118Ω	1.2Ω	720122		
L3	Osc. Coil	2Ω	9.5Ω	716056	14-1074	
L4	1st IF	25Ω	25Ω	720121	16-6668	
L5	2nd IF	22Ω	22Ω	720123		

BATTERIES

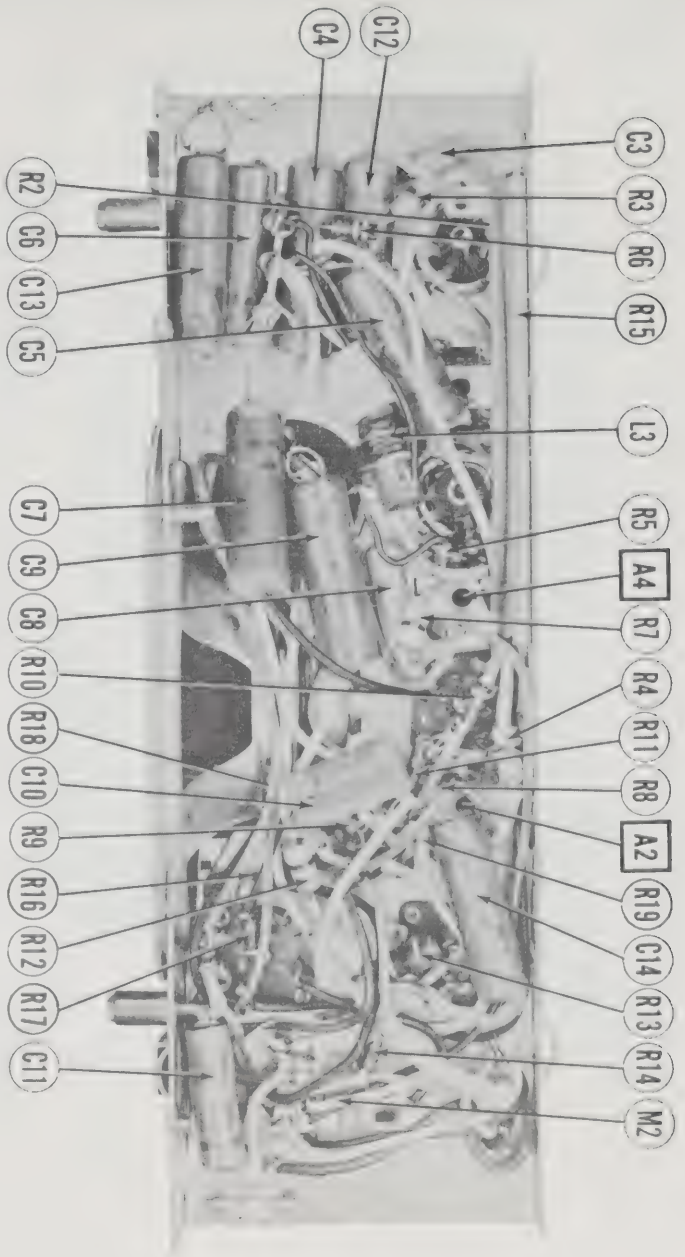
ITEM No.	VOLTAGE	EMERSON PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1	9V "A" 90V "B"				753			F6A60	

MISCELLANEOUS

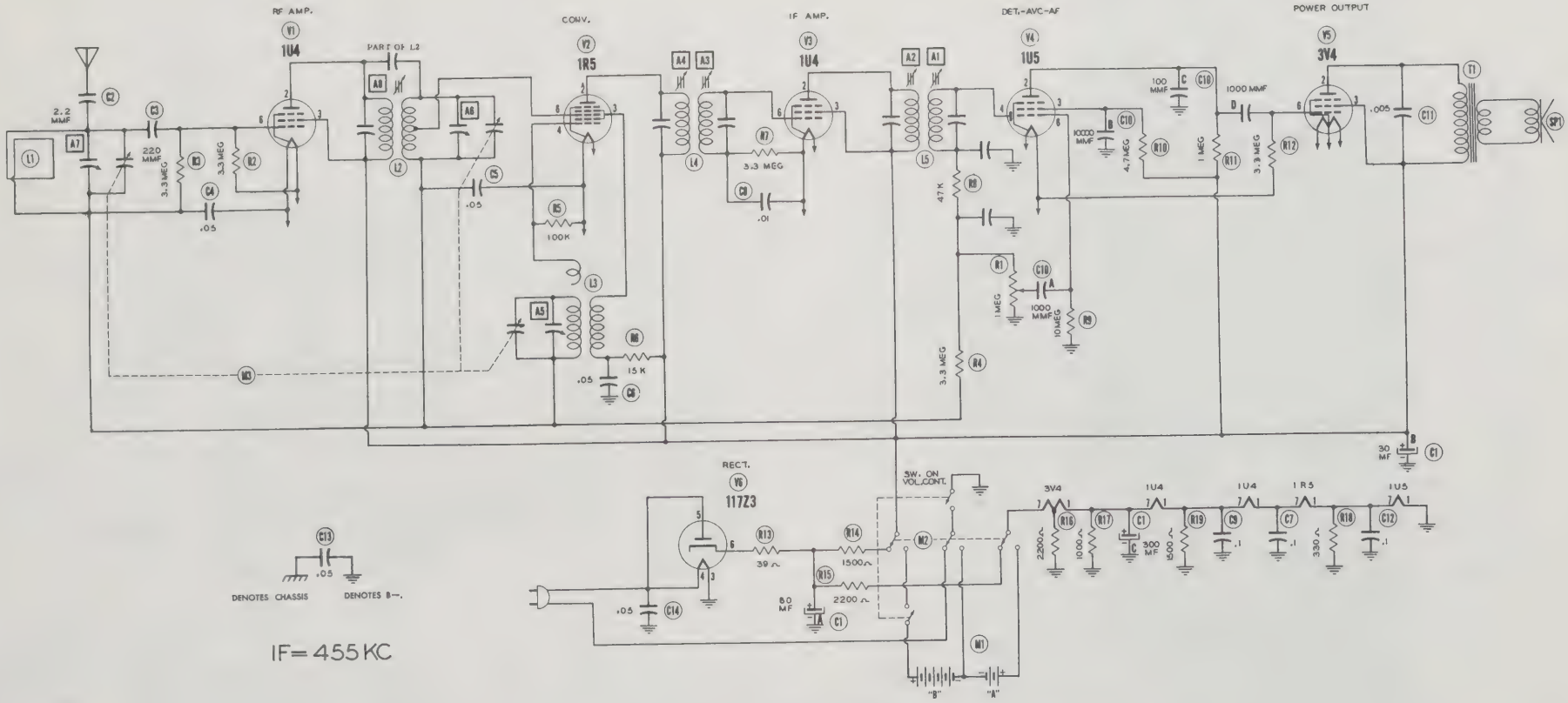
ITEM No.	PART NAME	EMERSON PART No.	NOTES
M2	Switch	510043	AC/DC-Battery
M3	3 Gang Var. Cap.	900076	(23-395MMF, 13-255MMF, 12-155MMF)
	Dial Crystal	520126	
	Dial Pointer	525041-1	



CHASSIS—BOTTOM VIEW



EMERSON MODELS 656B, 657B



V & R TAKEN IN AC/DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	2.6 VDC	85VDC	85VDC	0V.	2.6VDC	.3VDC	4VDC
V 2	1R5	1.2VDC	85VDC	65VDC	8-8.2VDC	1.2VDC	.2VDC	2.6VDC
V 3	1U4	4VDC	85VDC	85VDC	0V.	4VDC	.3VDC	5.4VDC
V 4	1U5	0V.	9.4VDC	4.5VDC	-.1VDC	0V.	-.1VDC	1.2VDC
V 5	3V4	5.4VDC	80VDC	85VDC	0V.	6.8VDC	.1VDC	8VDC
V 6	117Z3	117VAC	105VDC	0V.	117VAC	117VAC	105VDC	0V.

† TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1U4	*	†1.5KΩ	†1.5KΩ	Inf.	*	2.5 Meg.	*
V 2	1R5	*	†1.5KΩ	†16KΩ	100KΩ	*	2.5 Meg.	*
V 3	1U4	*	†1.5KΩ	†1.5KΩ	Inf.	*	3.3 Meg.	*
V 4	1U5	*	†1 Meg.	†4.7 Meg.	1 Meg.	0Ω	10 Meg.	*
V 5	3V4	*	†2KΩ	†1.5KΩ	0Ω	*	3.3 Meg.	*
V 6	117Z3	45Ω	†31Ω	0Ω	45Ω	45Ω	240KΩ	Inf.

† MEASURED FROM PIN 5 OF V6.
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

HALLICRAFTERS
MODEL SX-71

HALLICRAFTERS
MODEL SX-71

HALLICRAFTERS MODEL SX-71

TRADE NAME	Hallicrafters, Model SX-71	
MANUFACTURER	The Hallicrafters Co. 5th and Kostner Avenues, Chicago 24, Illinois	
TYPE SET	AC Operated Multi-Band Superheterodyne Communications Receiver	
TUBES (THIRTEEN)	Types 6BA6 RF Amp., 6AU6 Mixer, 6C4 Oscillator, 6BE6 Converter, 6SK7 1st IF Amp., 6SK7 2nd IF Amp., 6SH7 3rd IF Amp., 6AL5 Detector, 6H6 AVC Rect.-Noise Limiter, 6SC7 BFO-AF Amp., 6K6GT Power Output, 0D3/VR150 Voltage Regulator, 5Y3GT Rectifier	
POWER SUPPLY	105-125 Volts AC	RATING .75 Amp. at 117 Volts AC
TUNING RANGE-BROADCAST	560-1600KC	SHORT WAVE #1 1650-4700KC, #2 4.7MC-13.4MC #3 12.8-34MC, #4 46-56MC

"S" METER ADJUSTMENT

MECHANICAL:
Turn off receiver.
Remove the round metal disc directly below the meter and adjust the pivot adjustment screw in either direction until the needle indicates zero.

ELECTRICAL:
Turn the receiver on.
Set the Receive/Standby switch to Receive position.
Set "BFO" switch to "OFF" Position.
Turn the sensitivity control fully clockwise.
Set the Noise-Limiter switch to "OFF" position.
Short the antenna terminals to chassis.
Adjust the "S" meter control on rear of chassis until meter needle indicates zero.

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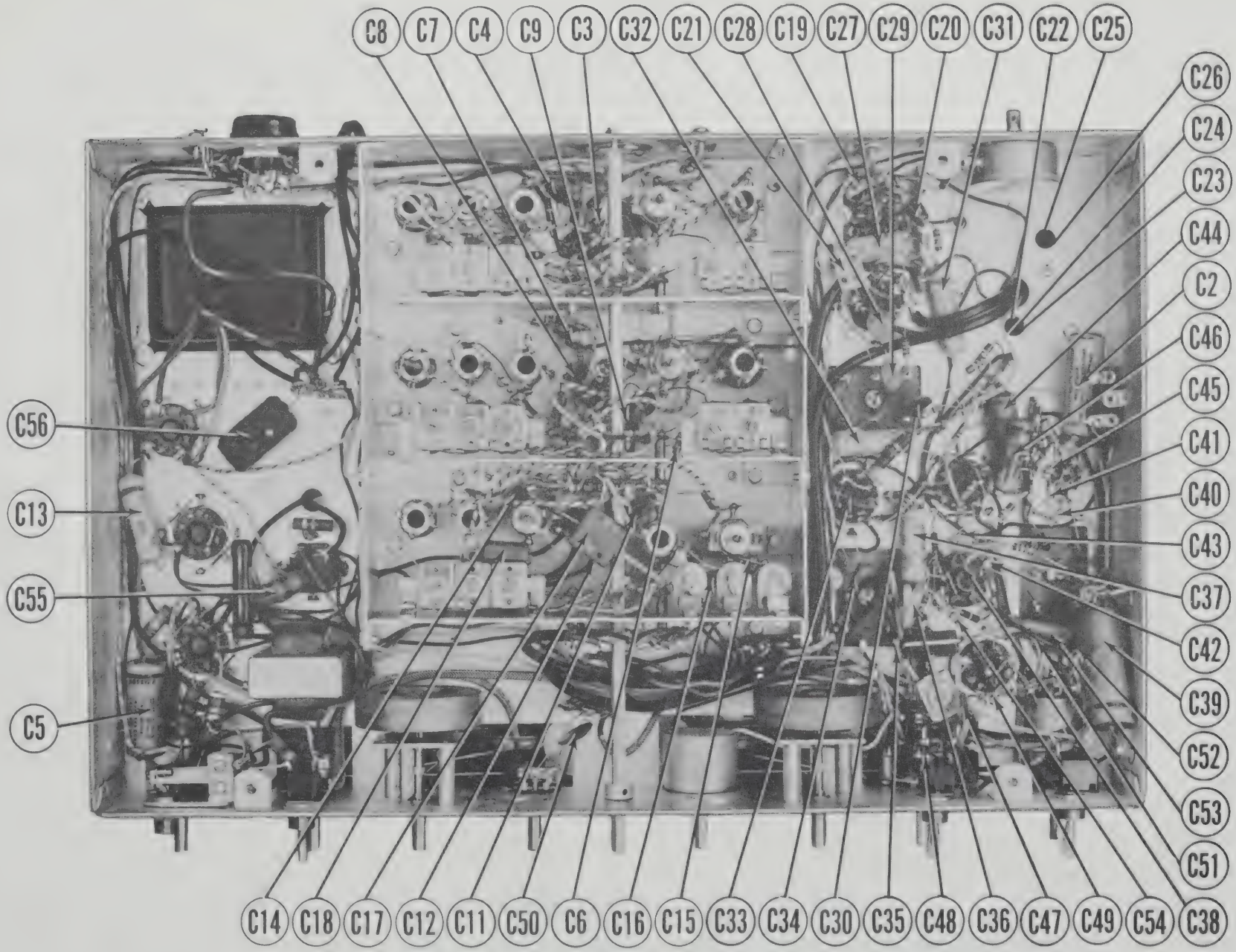
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HALLICRAFTERS
MODEL SX-71

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6BA6	6BA6	7BK	
V2	Mixer	6AU6	6AU6	7BK	
V3	Oscillator	6C4	6C4	6BG	
V4	Converter	6BE6	6BE6	7CH	
V5	1st IF Amp.	6SK7	6SK7	8N	
V6	2nd IF Amp.	6SK7	6SK7	8N	
V7	3rd IF Amp.	6SH7	6SH7	8BK	
V8	Detector	6AL5	6AL5	6BT	
V9	AVC Rect. -Noise Limiter	6H6	6H6	7Q	
V10	BFO-AF Amp.	6SC7	6SC7	8S	
V11	Power Output	6K6GT	6K6GT	7S	
V12	Voltage Reg.	0D3/VR150	0D3/VR150	4AJ	
V13	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: HALLICRAFTER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	450	45B113	AF1244J		UPT62245		D13409	▲ Filter
B	20	450							■ Filter
C	20	450							▲ Filter
C2	1	50	45A163	PRS150/4		BR145		TVA-1300	Stabilizing Cap.
C3	220		47B20221K5	SI220	D6-221	5W5T2	GP2K-220	19C13	RF Coupling
C4A	4000		47A218	BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	RF Cathode
B	4000					1D5D4			RF Screen
C5	.25	200	46AT254J	P488-25		GT2P25		2TM-2	Cathode Bypass
C6	15			SI15	D6-150	5W5Q2	GP1K-15	19C22	RF Coupling
C7A	4000		47A218	BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	1st Conv. Screen
B	4000					1D5D4			1st Conv. Plate Dec.
C8	5000		47A168	BPD-005	DD-502	1D5D5	811-005	29C1	1st Conv. Cath.
C9	100		47X20UJ101K	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
C10	2		47A160-4		TCZ-2.2				Osc. Coupling
C11	100		47X20UJ101K	SI100	D6-101	5W5T1	GP1K-100	19C11	Osc. Feedback
C12	100		47X20UJ101K	SI100	D6-101	5W5T1	GP1K-100	19C11	Osc. Grid Cap.
C13	.05	400	46AW503J	P488-05	DF-503	PTE4S5		4TM-15	Decoupling
C14	100		47X20UJ101K	SI100N750	TCN-100		N750L-100	29C16	Fixed Trimmer
C15	25		47X20UK250K		TCN-25		N750K-25	19C26	Fixed Trimmer
C16	2200	500	47X30D222J						Fixed Padder
C17	910	500	47X30D911J						Fixed Padder
C18	1500	500	47X30D152G						Fixed Padder
C19	300	500	47X20B301J	1469-0003	TCZ-300	5R5T3		MS-33	Fixed Trimmer
C20	5000		47A168	BPD-005	DD-502	1D5D5	811-005	29C1	1st Conv. Plate Dec.
C21	300	500	47X20B301J	1469-0003	TCZ-300	5R5T3		MS-33	Fixed Trimmer
C22	100		47X20UJ101K	SI100N750	TCN-100		N750L-100	29C16	Fixed Trimmer
C23	47		47X20UK470K	SI47	D6-470	5W5Q5	GP1K-47	19C25	Osc. Grid Cap.
C24	5000		47A168	BPD-005	DD-502	1D5D5	811-005	29C1	2nd Conv. Cath.
C25	5000		47A168	BPD-005	DD-502	1D5D5	811-005	29C1	2nd Conv. Screen
C26A	4000		47A218	BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	2nd Conv. Plate Dec.
B	4000					1D5D4			AVC Filter
C27	.05	400	46AW503J	P488-05	DF-503	PTE4S5		4TM-15	1st IF Cath.
C28	5000		47A168	BPD-005	DD-502	1D5D5	811-005	29C1	1st IF Screen
C29	5000		47A168	BPD-005	DD-502	1D5D5	811-005	29C1	1st IF Dec.
C30	5000		47A168	BPD-005	DD-502	1D5D5	811-005	29C1	AVC Filter
C31	.05	400	46AW503J	P488-05	DF-503	PTE4S5		4TM-15	AVC Filter
C32	.05	400	46AW503J	P488-05	DF-503	PTE4S5		4TM-15	2nd IF Cath.
C33	5000		47A168	BPD-005	DD-502	1D5D5	811-005	29C1	2nd IF Screen
C34	5000		47A168	BPD-005	DD-502	1D5D5	811-005	29C1	2nd IF Plate Dec.
C35	10		47X20UK100K	SI10N750	TCN-10		N750K-10	19C4	Fixed Padder
C36	33	500	47X20A330K	SI33NPO	TCZ-33	5W5Q3	NPOL-33	29C13	IF Coupling
C37	.05	400	46AW503J	P488-05	DF-503	PTE4S5		4TM-15	3rd IF Cath.
C38	5000		47A168	BPD-005	DD-502	1D5D5	811-005	29C1	3rd IF Screen
C39	.25	600	46AX254J	684-25		GT6P25		6TM-2	3rd IF Dec.
C40	220		47B20221K5	SI220	D6-221	5W5T2	GP2K-220	19C13	Diode Load Cap. *
C41	220		47B20221K5	SI220	D6-221	5W5T2	GP2K-220	19C13	Diode Load Cap. *
C42	25		47X20UK250K	SI25	D6-25	5W5Q25	GP1K-25	19C27	IF Coupling

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: HALLICRAFTER PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R31	1000Ω	1	23X30X102K	BTA-1000	2nd IF Amp. Cathode-See Note 1
R32	2700Ω	½	23X20X272K	BTS-2700	Bias Network
R33	680Ω	½	23X20X681K	BTS-680	Bias Network
R34	6800Ω	½	23X20X682K	BTS-6800	2nd IF Amp. Screen
R35	3300Ω	½	23X20X332K	BTS-3300	2nd IF Amp. Plate Decoupling
R36	100KΩ	½	23X20X104K	BTS-100K	Phase Correction
R37	2.2 Meg.	½	23X20X225K	BTS-2.2 Meg.	3rd IF Amp. Grid
R38	270Ω	½	23X20X271K	BTS-270	3rd IF Amp. Cathode
R39	33KΩ	½	23X20X333K	BTS-33K	3rd IF Amp. Screen
R40	3300Ω	½	23X20X332K	BTS-3300	3rd IF Amp. Decoupling
R41	56KΩ	½	23X20X563K	BTS-56K	De-emphasis
R42	39KΩ	½	23X20X393K	BTS-39K	Ratio Det. Diode Load
R43	220KΩ	½	23X20X224K	BTS-220K	Ratio Det. Diode Load
R44	100KΩ	½	23X20X104K	BTS-100K	Voltage Divider
R45	82KΩ	½	23X20X823K	BTS-82K	Voltage Divider
R46	220KΩ	½	23X20X224K	BTS-220K	Det. Diode Load
R47	2.2 Meg.	½	23X20X225K	BTS-2.2 Meg.	Limiter Diode Load
R48	470KΩ	½	23X20X474K	BTS-470K	Limiter Filter
R49	470KΩ	½	23X20X474K	BTS-470K	Limiter Filter
R50	470KΩ	½	23X20X474K	BTS-470K	AVC Diode Load
R51	1 Meg.	½	23X20X105K	BTS-1 Meg.	AVC Network
R52	150Ω	½	23X20X151K	BTS-150	AVC Shunt
R53	180KΩ	½	23X20X184K	BTS-180K	Delayed AVC
R54	27KΩ	½	23X20X273K	BTS-27K	Delayed AVC
R55	100KΩ	½	23X20X104K	BTS-100K	BFO Grid
R56	22KΩ	½	23X20X223K	BTS-22K	BFO Plate
R57	15 Meg.	½	23X20X156K	BTS-15 Meg.	AF Amp. Grid
R58	220KΩ	½	23X20X224K	BTS-220K	AF Amp. Plate
R59	10KΩ	1	23X30X103K	BTA-10K	AF Amp. Plate Decoupling
R60	560Ω	1	23X30X561K	BTA-560	Power Output Cathode
R61	560Ω	1	23X30X561K	BTA-560	Voice Coil Shunt
R62	2500Ω	10	24BG252D	1 3/4A-2500	Voltage Dropping-Wire Wound
R63	6.8Ω	1	23X30X068K	BW-1-6.8	AVC and Limier Filter
R64	6.8Ω	1	23X30X068K	BW-1-6.8	Det. Filament
R65	3300Ω	½	23X20X332K	BTS-3300	Decoupling

Note 1. Some models use a 270Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: HALLICRAFTERS PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1A	117VAC @ .75A	560VCT .095ADC	5VAC @ 2A	6.3VAC @ 3.8A	52C174	P-6313		PH-90 ② ③
B					52C175 ①			

① Alternate part.
② Drill new mounting holes.
③ Add series resistor to reduce plate voltage.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: Hallicrafters PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
T2	7000Ω	500Ω Tap @ 3.2Ω	880Ω	50Ω Tap @ .5Ω	55B120	A-3878	A-2931		

FILTER CHOKE

ITEM No.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ∽)	REPLACEMENT DATA: HALLICRAFT PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	INSTALLATION NOTES
L1	.065ADC	335Ω	9 Henries	56B107			R-1365 ②	② Drill new mounting holes.

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA HALLICRAFTER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C43	220		47B20221K5	SI220	D6-221	5W5T25	GP2K-220	19C13	Noise Limiter Filter
C44	.1	200	46AU104J	P288-1	DF-104	PTE4P1		2TM-1	Noise Limiter Filter
C45	220		47B20221K5	SI220	D6-221	5W5T25	GP2K-220	19C13	Noise Limiter Filter
C46	.02	200	46AU203J	P488-02	DF-203	PTE4S2		2TM-12	Audio Coupling
C47	5000		47A168	BPD-005	DD-502	1D5D5	811-005	29C1	Audio Coupling
C48	5000		47A168	BPD-005	DD-502	1D5D5	811-005	29C1	Audio Coupling
C49	220		47B20221K5	SI220	D6-221	5W5T25	GP2K-220	19C13	AF Amp. Plate
C50A	4000		47A218	BPD-2 x 004	DD-2-502	1D5D4	882-2 x 004	36C2	Audio Coupling
B	4000					1D5D4			Tone Comp.
C51	220		47B20221K5	SI220	D6-221	5W5T25	GP2K-220	19C13	Osc. Grid Cap.
C52	470	500	47X20B471J	1469-0005		5R5T5		MS-35	Fixed Trimmer
C53	.01	600	46AY103J	P688-01	D6-103	PTE6S1	811-01	6TM-11	Osc. Feedback
C54	1		47A160-2		TCZ-1				Osc. Coupling
C55	.01	600	46AY103J	P688-01	D6-103	PTE6S1	811-01	6TM-11	Output Plate
C56	.01	600	46X35X103M	P688-01	D6-103	PTE6S1	811-01	6TM-11	Line Filter

* When either items C40 or C41 are replaced, replace both with capacitors of equal value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Hallicrafters PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1	10KΩ	½	25B582				Sensitivity control
R2A	500KΩ	½	25B604	QI3-133	AG-60-Z	B-60-S	Volume control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R2A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R2A per instructions
R3A	500KΩ	½	25B589	QI3-133	AG-60-Z	B-60	Tone control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R3A per instructions
R4	500Ω	4	25C022		RTV-126		S-Meter adjustment-Wire Wound

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA HALLICRAFTER PART No.	IRC PART No.	IDENTIFICATION CODES
R5	10Ω	½	23X20X100K		Parasitic Suppressor
R6	1 Meg.	½	23X20X105K	BTS-1 Meg.	RF Amp. Grid
R7	82Ω	½	23X20X820K	BTS-82	RF Amp. Cathode
R8	15Ω	½	23X20X150K		Parasitic Suppressor
R9	8200Ω	½	23X20X822K	BTS-8200	RF Amp. Screen
R10	100Ω	½	23X20X101K	BTS-100	RF Transformer Shunt
R11	3300Ω	½	23X20X332K	BTS-3300	RF Amp. Plate Decoupling
R12	82Ω	½	23X20X820K	BTS-82	Series S-Meter
R13	47KΩ	1	23X30X473K	BTA-47K	Voltage Divider
R14	47KΩ	2	23X40X473K	BTB-47K	Voltage Divider
R15	2.2 Meg.	½	23X20X225K	BTS-2.2 Meg.	Mixer Grid
R16	2200Ω	½	23X20X222K	BTS-2200	Mixer Cathode
R17	330KΩ	½	23X20X334K	BTS-330K	Mixer Screen
R18	10Ω	½	23X20X100K		Parasitic Suppressor
R19	22KΩ	½	23X20X223K	BTS-22K	Osc. Grid
R20	10KΩ	1	23X30X103K	BTA-10K	Osc. Plate
R21	22KΩ	½	23X20X223K	BTS-22K	Osc. Grid
R22	15Ω	½	23X20X150K		Parasitic Suppressor
R23	150Ω	½	23X20X151K	BTS-150	Conv. Cathode
R24	10KΩ	1	23X30X103K	BTA-10K	Conv. Screen
R25	220Ω	½	23X20X221K		Parasitic Suppressor
R26	100KΩ	½	23X20X104K	BTS-100K	AVC Network
R27	270Ω	½	23X20X271K	BTS-270	1st IF Amp. Cathode
R28	2700Ω	½	23X20X272K	BTS-2700	Bias Network
R29	33KΩ	½	23X20X333K	BTS-33K	1st IF Amp. Screen
R30	100KΩ	½	23X20X104K	BTS-100K	AVC Network

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PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA HALLICRAFTER PART No.	REPLACEMENT DATA MEISSNER PART No.	NOTES
L2	Ant. Coil	25Ω	3.7Ω	51B1088		Band 1
L3	Ant. Coil	.8Ω	1.4Ω	51B1089		Band 2
L4	Ant. Coil	.7Ω	.1Ω	51B1090		Band 3
L5	Ant. Coil	.5Ω	.1Ω	51B1091		Band 4
L6	Ant. Coil	.5Ω	.1Ω	51B1092		Band 5
L7	RF Choke	10Ω		53A107		
L8	RF Coil	.7Ω		51B1093		Band 1
L9	RF Coil	.5Ω		51B1094		Band 2
L10	RF Coil	14Ω		51B1095		Band 3
L11	RF Coil	2.2Ω		51B1096		Band 4
L12	RF Coil	.3Ω		51B1097		Band 5
L13	Osc. Coil	5Ω		51B1098		Band 1 Tap at 3.5Ω
L14	Osc. Coil	1.5Ω	1.6Ω	51B1099		Band 2 Tap at .5Ω
L15	Osc. Coil	3.2Ω	.1Ω	51B1100		Band 3 Taps at .2Ω and .4Ω
L16	Osc. Coil	1.7Ω	0Ω	51B1101		Band 4 Taps at .1Ω and .3Ω
L17	Osc. Coil	.4Ω	0Ω	51B1160		Band 5 Tap at .2Ω
L18	Osc. Coil	0Ω		50H448		Bands, 3, 4,5(2.53MC)
L19	2.075MC IF	.5Ω	.5Ω	50H414		
L20	455KC 1st IF	1Ω	4.8Ω	50H416		
L21	455KC 2nd IF	1Ω	4.8Ω	50H416		
L22	455KC 3rd IF	5.5Ω	5.5Ω	50H415		Taps at 4.2Ω and 4Ω
L23	Det. Trans.	9Ω	9Ω	50H418		Tap at 4.5Ω
L24	BFO Coil	16Ω		54B039		Tap at 4Ω

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA HALLICRAFTER PART No.	NOTES
M1	Bayonet	6-8	.25	Blue	39A003	Type #44
M2	Bayonet	6-8	.25	Blue	39A003	Type #44
M3	Bayonet	6-8	.15	Brown	39A004	Type #47
M4	Bayonet	6-8	.15	Brown	39A004	Type #47

MISCELLANEOUS

ITEM No.	PART NAME	HALLICRAFTERS PART No.	NOTES
M5	Crystal	19A123	455KC
M6A	Switch	62B051	Band (Antenna and Mixer)
B		62B049	Band (Oscillator Grid)
C		62B050	Band (Oscillator Plate)
D		62B048	Band (Conv. Plate and Bias)
M7	Switch	60B343	Function
M8	Switch	60A285	BFO-Off
M9	Switch	60A138	Noise Limiter-Off
M10	Switch	60A139	Receive-Standby
M11	Meter	82B166	Carrier Level Indicator
M12	Tuning Gang	48D209	Main (3 section)
M13	Tuning Gang	48C210	Bandspread(3 section)
M14	Variable Cap.	48A182	Crystal Phasing
A7	Trimmer	44A047	
	Trimmer Strip	44B383	A13, A16, A17
	Trimmer Strip	44B382	A14, A18, A31
	Trimmer Strip	44B381	A15, A19, A32
	Trimmer	44A378	A20, A24, A30
	Trimmer Strip	44B380	A22, A28
	Trimmer Strip	44B379	A23, A29
	Dial Pointer	82A169	
	Dial Scale	83D358	

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointers of the main tuning and bandspread dials turn the tuning gangs fully closed and set pointer to 0 reference mark on the logging scale.

Set the tone control to maximum. Sensitivity control to maximum. Volume control to maximum. Noise limiter switch to "off" position, and Receiver- Standby switch to receive position.

IF ALIGNMENT

Before attempting step 5 connect two matched 100KΩ (± 1%) resistors in series from point A to chassis. The junction of these two resistors is alignment point B as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Direct	High side to stator of middle section of main tuning gang. Low side to chassis.	455KC (Unmod.)	Band 2	Both dials at 50 on logging scale.	Across voice coil		Turn reception switch to broad crystal, and BFO switch to BFO. Remove the knob from "CW" pitch control and adjust shaft for zero beat. Replace knob with zero at index line.
2.	Direct	"	"	"	"	"	A1	Adjust "CW" pitch for 1000Ω note. Rock the signal generator while turning the slug very slowly in one direction. As the adjustment is made, the output goes thru a maximum, dips down and goes up again. The correct setting of the slug is at the center of the dip.
3.	Direct	"	"	"	"	"		Turn the reception switch to "sharp crystal" position and set the signal generator frequency for maximum output on the crystal frequency.
4.	Direct	"	455KC (400 ∿ Mod.)	"	"	"	A2, A3, A4, A5, A6, A7, A8	Turn reception switch to "Normal IF" position. BFO switch to "OFF" position. Adjust for maximum output.
5.	Direct	"	455KC (Unmod.)	"	"	Use VTVM. DC Probe to Point A. Common to Point B.	A9	Turn reception switch to NBFM position. Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
6.	Direct	"	2.075MC (400 ∿ Mod.)	Band 4	"	Across voice coil	A10, A11, A12	Turn the reception switch to "Normal IF" position. Adjust A10 until a signal is heard. Adjust A-11 and A12 for maximum output. Repeat until no further improvement can be made.

RF ALIGNMENT

Connect a jumper between "A2" and "G" terminals of the antenna terminal strip.

Set the bandspread dial at 100 on the logging scale for all steps except step 16. In step 16 the main tuning dial should be set at 100 on the logging scale.

Turn the reception switch to "normal IF" position and the "BFO" switch to "BFO" position.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
7.	300Ω carbon res.	High side to antenna terminal "A1". Low side to chassis.	1500KC	Band 1	1500KC	Across voice coil	A13, A14	Adjust A13 until a signal is heard. Adjust A14 for maximum output.
8.	"	"	600KC	"	600KC	"	A15	Adjust for maximum output.
9.	"	"	1500KC	"	1500KC	"	A16	Adjust until a signal is heard. Repeat steps 7, 8 and 9 until no further improvement can be made.
10.	"	"	4MC	Band 2	4MC		A17, A18, A19	Adjust A17 until signal is he heard. Adjust A18 and A19 for maximum output. Repeat until no further improvement can be made.
11.	"	"	12MC	Band 3	12MC	"	A20	Adjust until signal is heard.
12.	"	"	5.2MC	"	5.2MC	"	A21	"
13.	"	"	12MC	"	12MC	"	A20, A22, A23	Adjust for maximum output while "rocking" tuning gang. Repeat steps 11, 12 and 13 until no further improvement can be made.
14.	"	"	30MC	Band 4	30MC	"	A24	Adjust until signal is heard.
15.	"	"	14MC	"	14MC	"	A25, A26, A27, A28, A29,	Adjust A25 until signal is heard. Adjust A26, A27, A25, A28 and A29 for maximum output while "rocking" tuning gang. Repeat steps 14 and 15 until no further improvement can be made.
16.	"	"	54MC	Band 5	Bandspread dial at 54MC	"	A30, A31, A32	Adjust A30 until signal is heard. Adjust A31 and A32 for maximum output while "rocking" the tuning gang. Repeat until no further improvement can be made.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	0V. #.1VDC	48VDC	0V.	6.3VAC	260VDC	150VDC	48VDC	
V 2	6AU6	.5VDC	0V.	6.3VAC	0V.	260VDC	85VDC	4.4VDC	
V 3	6C4	90VDC	0V.	6.3VAC	0V.	90VDC	§-3.2VDC	0V.	
V 4	6BE6	§-.2VDC ¶1.1VDC	0V. ¶1.7VDC	6.3VAC	0V.	260VDC	0V. ¶150VDC	0V.	
V 5	6SK7	0V.	0V.	52VDC	0V. #.2VDC	52VDC	250VDC	6.3VAC	260VDC
V 6	6SK7	0V.	0V.	48VDC	0V. #.2VDC	48VDD	150VDC	6.3VAC	260VDC
V 7	6SH7	0V.	0V.	2VDC	0V.	2VDC	130VDC	6.3VAC	235VDC
V 8	6AL5	0V.	-50VDC	0V.	4.4VAC	-50VDC	0V.	-5.4VDC	
V 9	6H6	§0V.	0V.	-20VDC	-20VDC	0V. #-.2VDC	150VDC	4.3VAC	23VDC
V 10	6SC7	0V.	100VDC	-.6VDC	-5.4VDC	225VDC	0V.	6.3VAC	0V.
V 11	6K6GT	0V.	6.3VAC	260VDC	265VDC	0V.	48VDC	0V.	19VDC
V 12	OD3/VR150	0V.	0V.	150VDC	0V.	150VDC	0V.	150VDC	0V.
V 13	5Y3GT	0V.	290VDC	0V.	280VAC	0V.	280VAC	0V.	290VDC

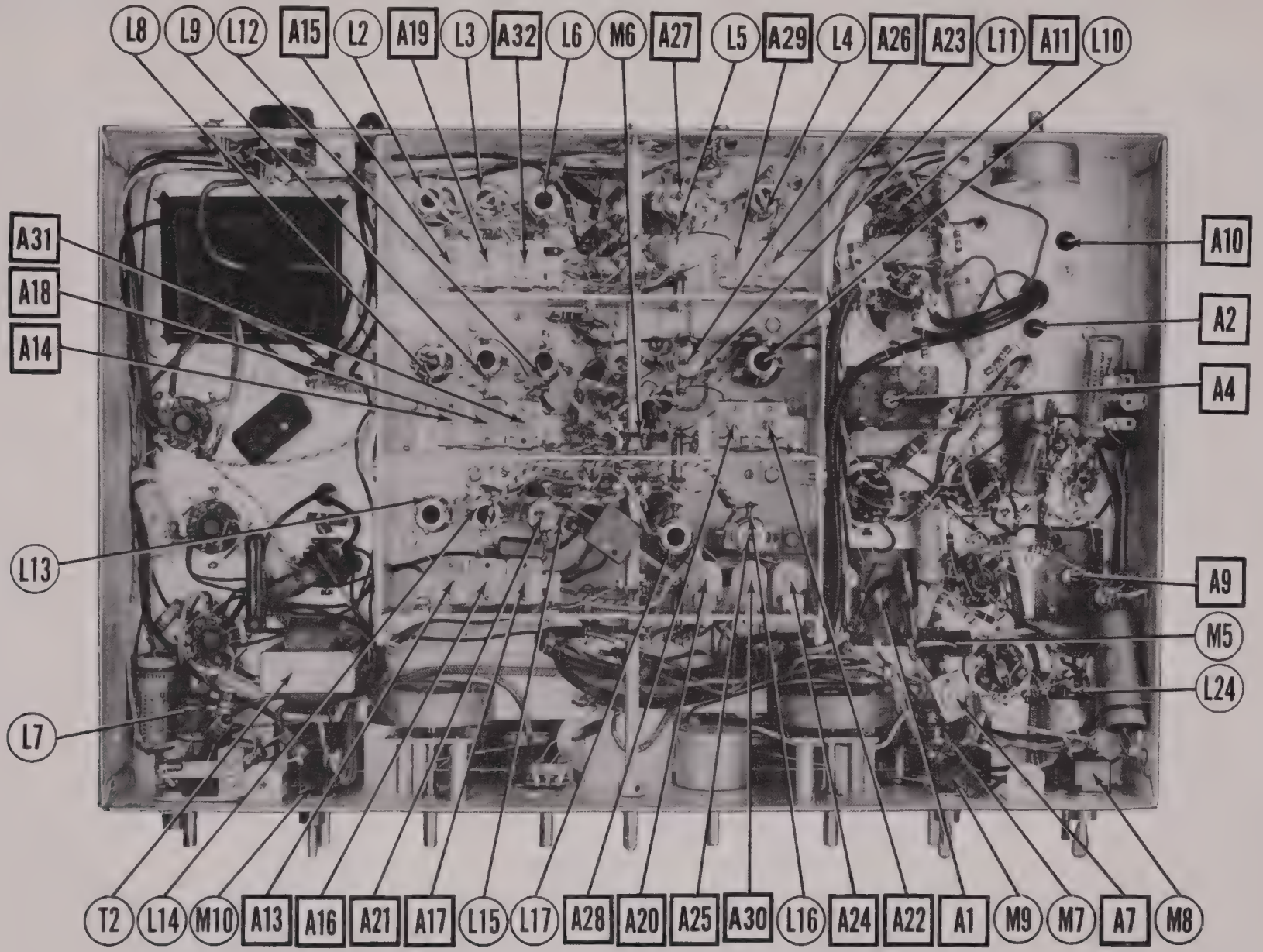
RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	1 Meg. #2.5 Meg.	8KΩ	0Ω	.1Ω	†4KΩ	†11KΩ	8KΩ	
V 2	6AU6	2.2 Meg.	0Ω	.1Ω	0Ω	†3.8KΩ	†330KΩ	2.2KΩ	
V 3	6C4	†13KΩ	0Ω	.1Ω	0Ω	†13KΩ	22KΩ	0Ω	
V 4	6BE6	22KΩ	150Ω	.1Ω	0Ω	†3.8KΩ	† Inf. ¶13KΩ	.5Ω	
V 5	6SK7	0Ω	0Ω	13KΩ	100KΩ #1.5 Meg.	13KΩ	†36KΩ	.1Ω	†3.6KΩ
V 6	6SK7	0Ω	0Ω	14KΩ	100KΩ #1.5 Meg.	14KΩ	†9.6KΩ	.1Ω	†3.6KΩ
V 7	6SH7	0Ω	0Ω	270Ω	2.2 Meg.	270Ω	†36KΩ	.1Ω	†3.6KΩ
V 8	6AL5	0Ω	340KΩ	0Ω	3.7Ω	Inf.	0Ω	Inf.	
V 9	6H6	0Ω	0Ω	2.2 Meg. ▲900KΩ	1.2 Meg. ▲900KΩ	320KΩ #470KΩ	†2.8KΩ	3.2Ω	27KΩ
V 10	6SC7	0Ω	†230KΩ	15 Meg.	100KΩ	†22KΩ	0Ω	.1Ω	0Ω
V 11	6K6GT	Inf.	.1Ω	†880Ω	†335Ω	500KΩ	8KΩ	0Ω	560Ω
V 12	OD3/VR150	Inf.	0Ω	†2.8KΩ	Inf.	†2.8KΩ	Inf.	†2.8KΩ	Inf.
V 13	5Y3GT	Inf.	35KΩ	Inf.	60Ω	Inf.	60Ω	Inf.	35KΩ

NOISE LIMITER SWITCH OFF UNLESS OTHERWISE NOTED.
RECEIVE-STANDBY SWITCH IN "RECIEVE" POSITION.
BANDSWITCH IN POSITION #1 UNLESS OTHERWISE NOTED.
FUNCTION SWITCH IN POSITION.#4.
BFO-AVC SWITCH ON UNLESS OTHERWISE NOTED.
† MEASURED FROM PIN 2 OF V13.
# BFO-AVC SWITCH "OFF.
▲ NOISE LIMITER SWITCH "ON".
¶ TAKEN WITH BANDSWITCH IN POSITIONS 3, 4, or 5.
§ TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.


L8
L9
L12
A15
L2
A19
L3
A32
L6
M6
A27
L5
A29
L4
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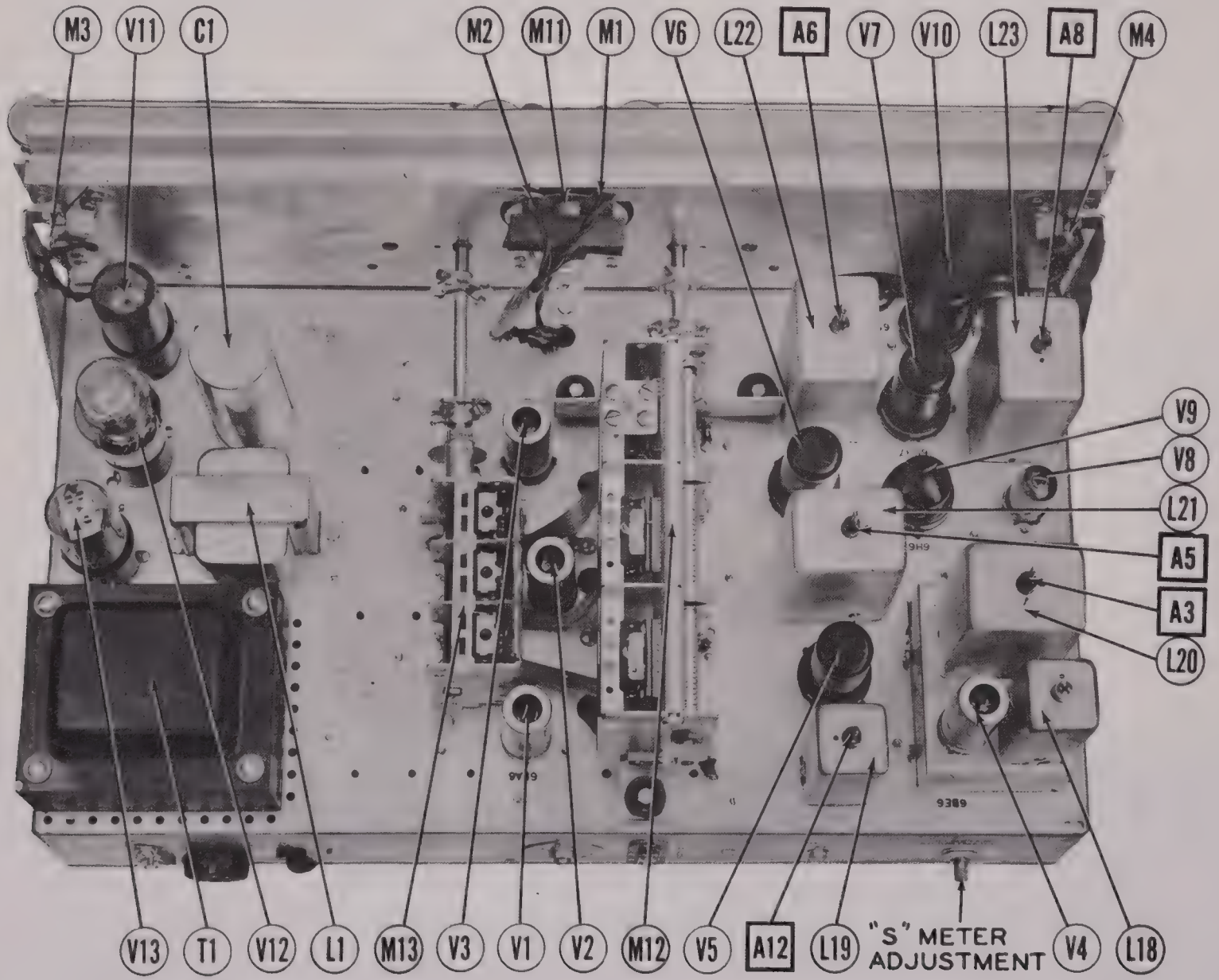
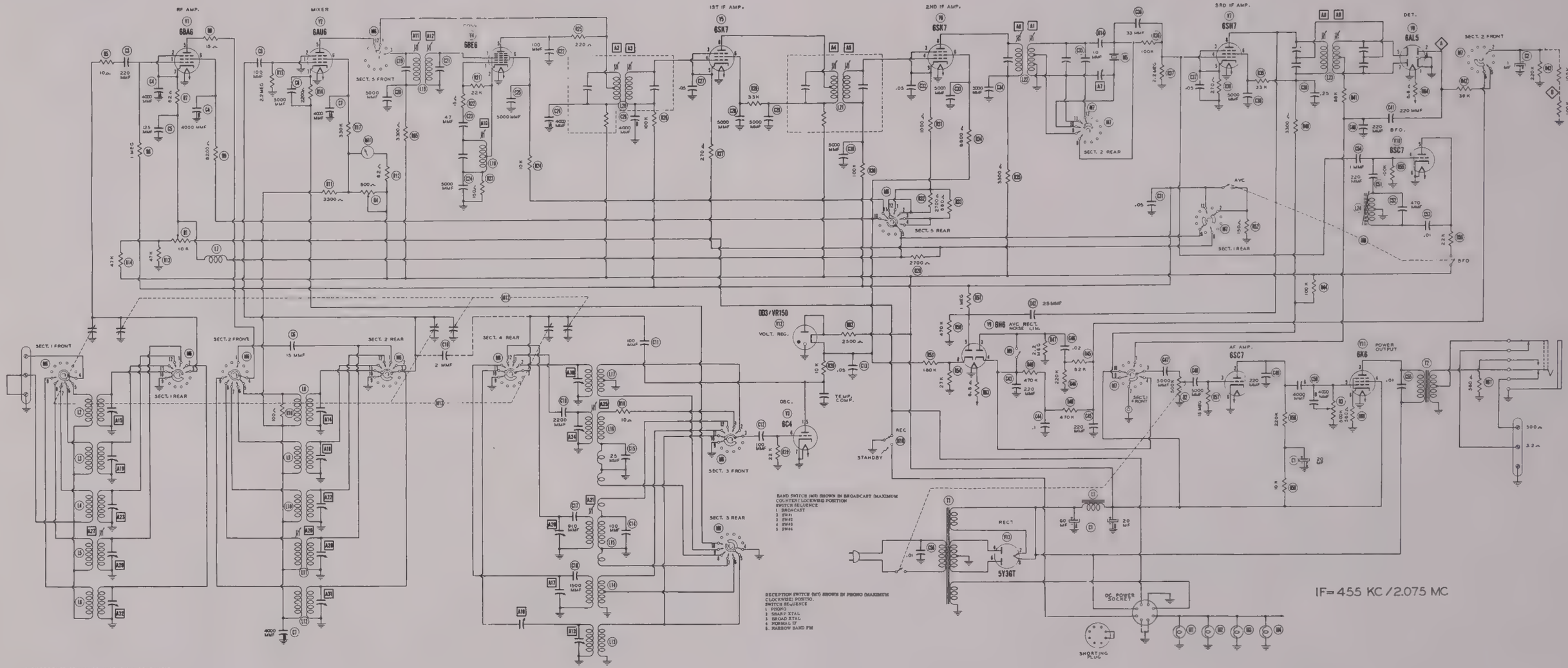
A23
L11
A11
L10
A31
A18
A14
A10
A2
A4
L13
A9
M5
L24
L7
T2
L14
M10
A13
A16
A21
A17
L15
L17
A28
A20
A25
A30
L16
A24
A22
A1
M9
M7
A7
M8


M3
V11
C1
M2
M11
M1
V6
L22
A6
V7
V10
L23
A8
M4
V9
V8
L21
A5
A3
L20
V13
T1
V12
L1
M13
V3
V1
V2
M12
V5
A12
L19
"S" METER ADJUSTMENT
V4
L18



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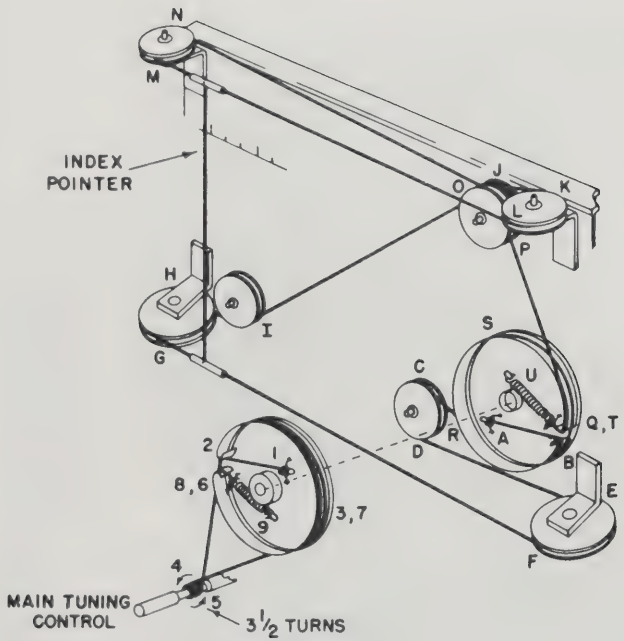
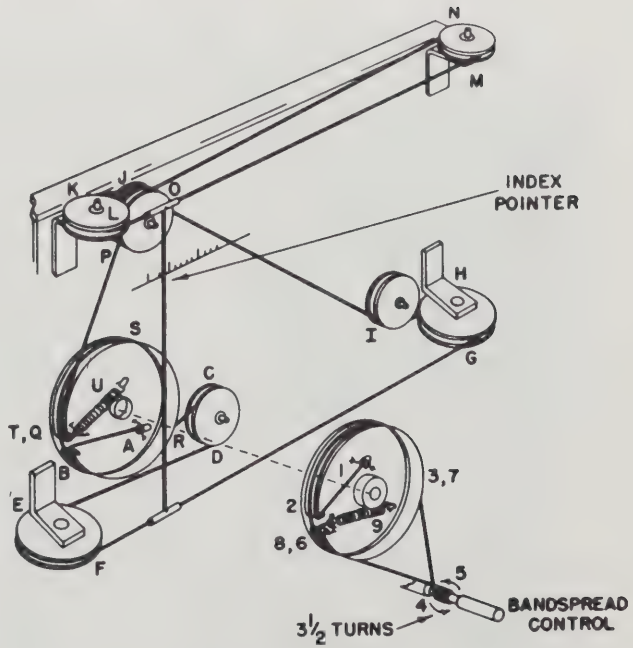


GENERAL COVERAGE DIAL DRIVE



BANDSPREAD DIAL DRIVE

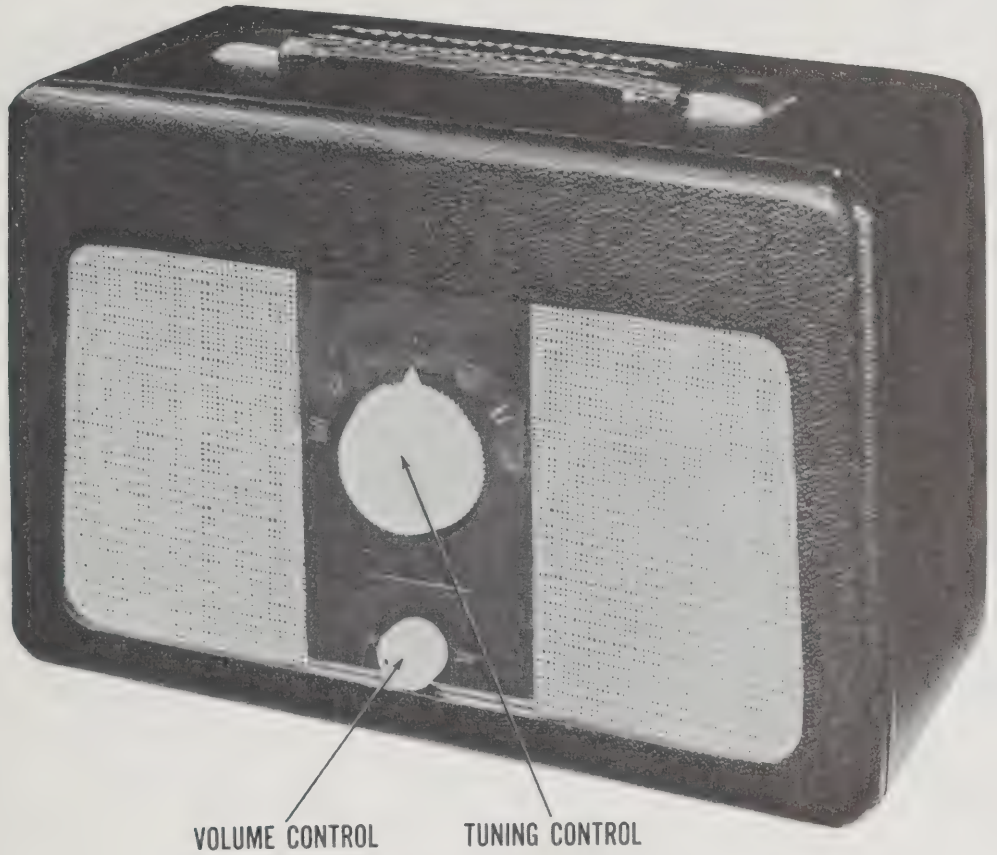
RESTRINGING DIAL CORD

The dial drive system of the SX-71 consists of four separate spring drives. The two drive shaft string systems are identical; the two pointer drive systems are similar but right and left handed.

(1) DRIVE SHAFT. - To restring either one, use a 26 inch length of 30 lb. test dial cord. Tie one end of the cord to position "1" on the drum and follow the stringing sequence "1" to "9" as shown. At position "9" stretch the tension spring and tie the cord securely to the spring. Note that the dial cord is wrapped around the drive shaft three and one half times for proper traction.

(2) POINTER DRIVE- To restring either one, use a 66 inch length of 30 lb. test dial cord. Tie one end of the dial cord to position "A" and follow the stringing sequency "A" to "U" as shown. At position "U" stretch the tension spring and tie the cord securely to the spring. Two small pieces of spaghetti tubing approximately one half inch long should be threaded on the cord, as shown, to provide a suitable purchase for the dial pointer. With the pointer drive, pulleys positioned as shown on the diagram, the tuning capacitor should be entirely closed. The pointer may now be fastened to the cord and aligned with the 0 position on the logging scale and the index marks on the dial scales. The ends of the pointer should be carefully crimped around the spaghetti tubing and cemented fast.

JEWEL MODEL 5010
(BATTERY-LINE OPERATED)



JEWEL MODEL 5010
(BATTERY-LINE OPERATED)

JEWEL MODEL 5010

TRADE NAME	Jewel, Model 5010
MANUFACTURER	Jewel Radio Co., 10-40 45th Ave., Long Island City 1, New York
TYPE SET	Three Power Operated Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types 1R5 Converter, 1U4 IF Amp., 1U5 DET-AVC-AF, 3V4 Power Output
POWER SUPPLY	110-120 Volts AC-DC or 7.5 Volts "A" Supply and 90 Volts "B" Supply
RATING	.14 Amp. at 117 Volts AC or 43MA at 7.5 Volts DC and 12MA at 90 Volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set pointer 1/8 inch below the "55" calibration mark on dial scale.

Use battery power if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (Grid) of 1R5 (V1). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy antenna to 200MMF to reduce hum modulation.
2.	.1MFD	"	1650KC	"	"	A5	"
3.		Loop	1400KC	Tune for max. output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

JEWEL
MODEL 5010

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		JEWEL PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1U4	1U4	6AR	
V3	DET.-AVC-AF	1U5	1U5	6BW	
V4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	JEWEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	150		PRS150/40-40		EDL5315X 20		TVA-3433	Filter-Red
B	40	150		PRS15/250					Filter-Green
C	200	15							Filament Byp.-Yello
C2	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	Filament Bypass
C4	.25	200		P488-25		GT2P25		2TM-P25	Filament Bypass
C5	.01	200		P488-01	D6-103	PTE4S1	811-01	4TM-S1	IF Grid Filter
C6	.05	200		P288-05	DF-503	PTE4S5		2TM-S5	Decoupling
C7	1000			S11000	D6-102	1W5D1	GP2L-001	19C1	Diode RF Filter
C8	.004	400		P688-004	D6-402	PTE6D4	GP2M-004	6TM-D4	Audio Coupling
C9	.01	200		P488-01	D6-103	PTE4S1	811-01	4TM-S1	AF Amp. Screen
C10	1000			S11000	D6-102	1W5D1	GP2L-001	19C1	AF Amp. Plate
C11	.004	400		P688-004	D6-402	PTE6D4	GP2M-004	6TM-D4	Audio Coupling
C12	.004	400		P688-004	D6-402	PTE6D4	GP2M-004	6TM-D4	Output Plate Bypass
C13	.2	200		P488-22		GT4P2		72P53	Line Isolation
C14	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

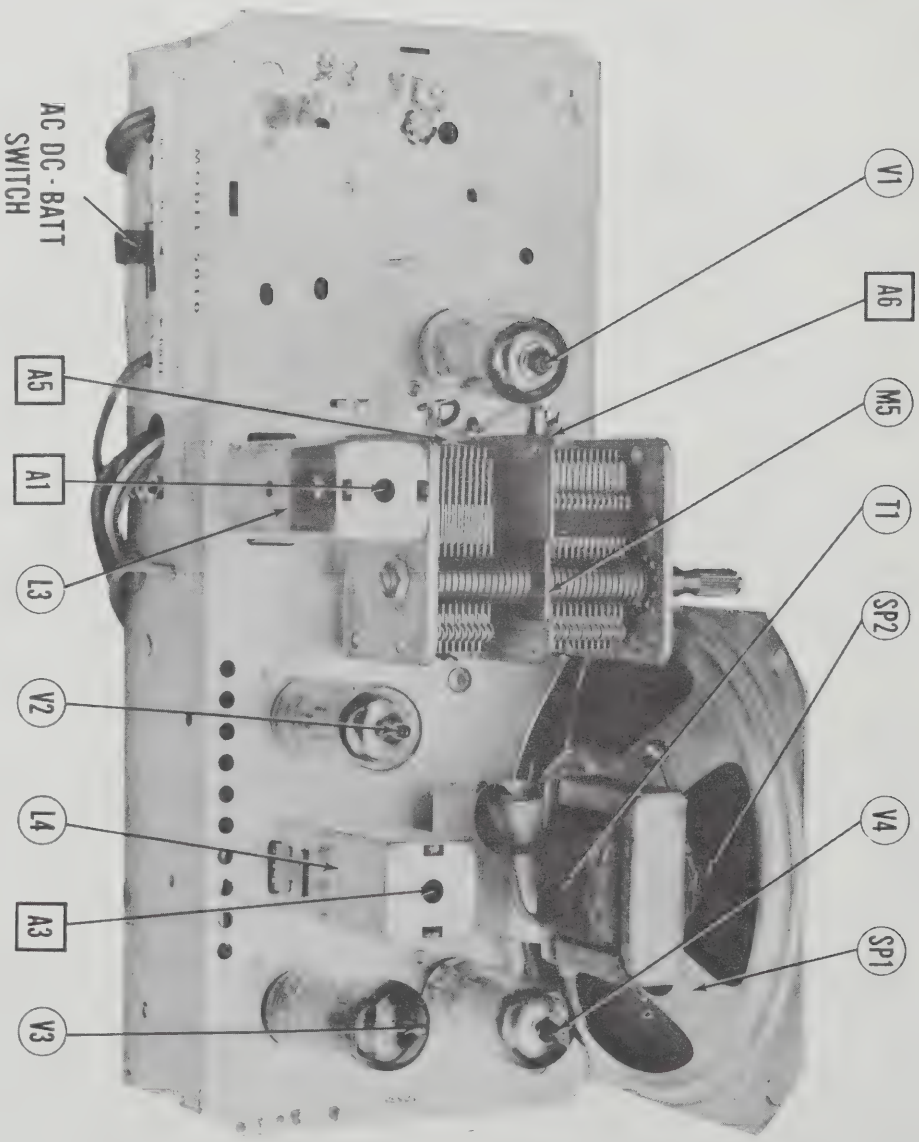
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	JEWEL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	1 Meg.	½	50-17	Q13-137	AM-63-Z	BSK-70-S	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-2	SW-A2	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	JEWEL PART No.	IRC PART No.	
R2	120KΩ	½		BTS-120K	Osc. Grid
R3	3.3 Meg.	½		BTS-3.3 Meg.	IF Grid
R4	8000Ω	½		BTS-8200	Decoupling
R5	2 Meg.	½		BTS-2.2 Meg.	AVC Network
R6	10 Meg.	½		BTS-10 Meg.	AF Grid
R7	5 Meg.	½		BTS-4.7 Meg.	AF Screen
R8	240KΩ	½		BTS-220K	AF Plate
R9	1 Meg.	½		BTS-1 Meg.	Output Grid
R10	1000Ω	½		BTS-1000	Filament String
R11	1000Ω	½		BTS-1000	Filament String
R12	1500Ω	½		BTS-1500	Filament String
R13	3000Ω	5		1 3/4A-3000	Filament Dropping-Wire Wound
R14	2700Ω	1		BTA-2700	Filter
R15	47Ω	1			Surge Limiter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		JEWEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	10000Ω	3.6Ω	530Ω	.6Ω	Part of SP1				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			JEWEL PART No.	JENSEN PART No.	QUAM PART No	
SP1	FIELD	V. C. IMP.	80-15	ST-113 ① MOD. P4-X	4A07 ①	① Remount output transformer.
	PM	3.6Ω				
	CONE DIA.	V. C. DIA.				
SP2	4"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	JEWEL PART No.	MEISSNER PART No.	
L1	Loop Ant.	3Ω				
L2	Osc. Coil	1.2Ω	6.3Ω		14-1074	
L3	1st IF	25Ω	25Ω		16-6668	
L4	2nd IF	25Ω	25Ω	61-23	16-6669	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	JEWEL PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.060ADC		NB-5	8J1	

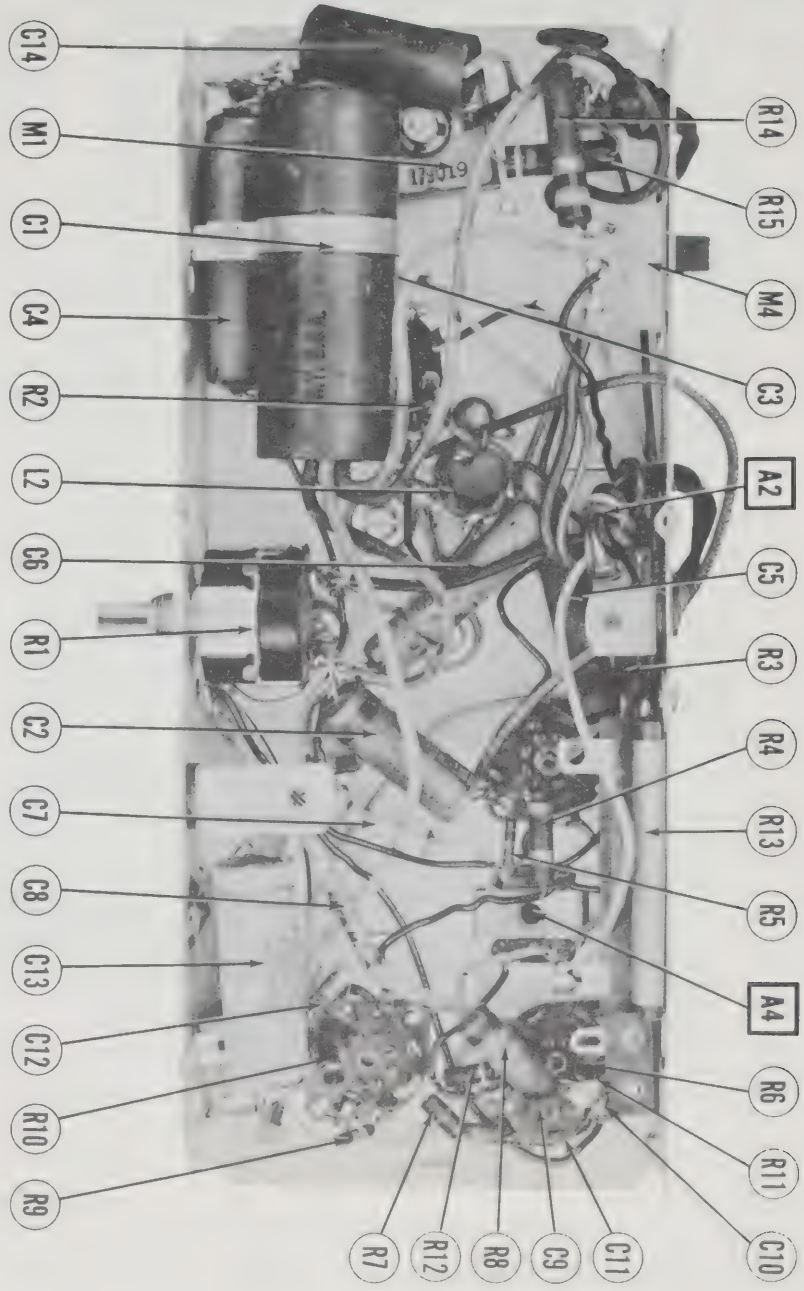
BATTERIES

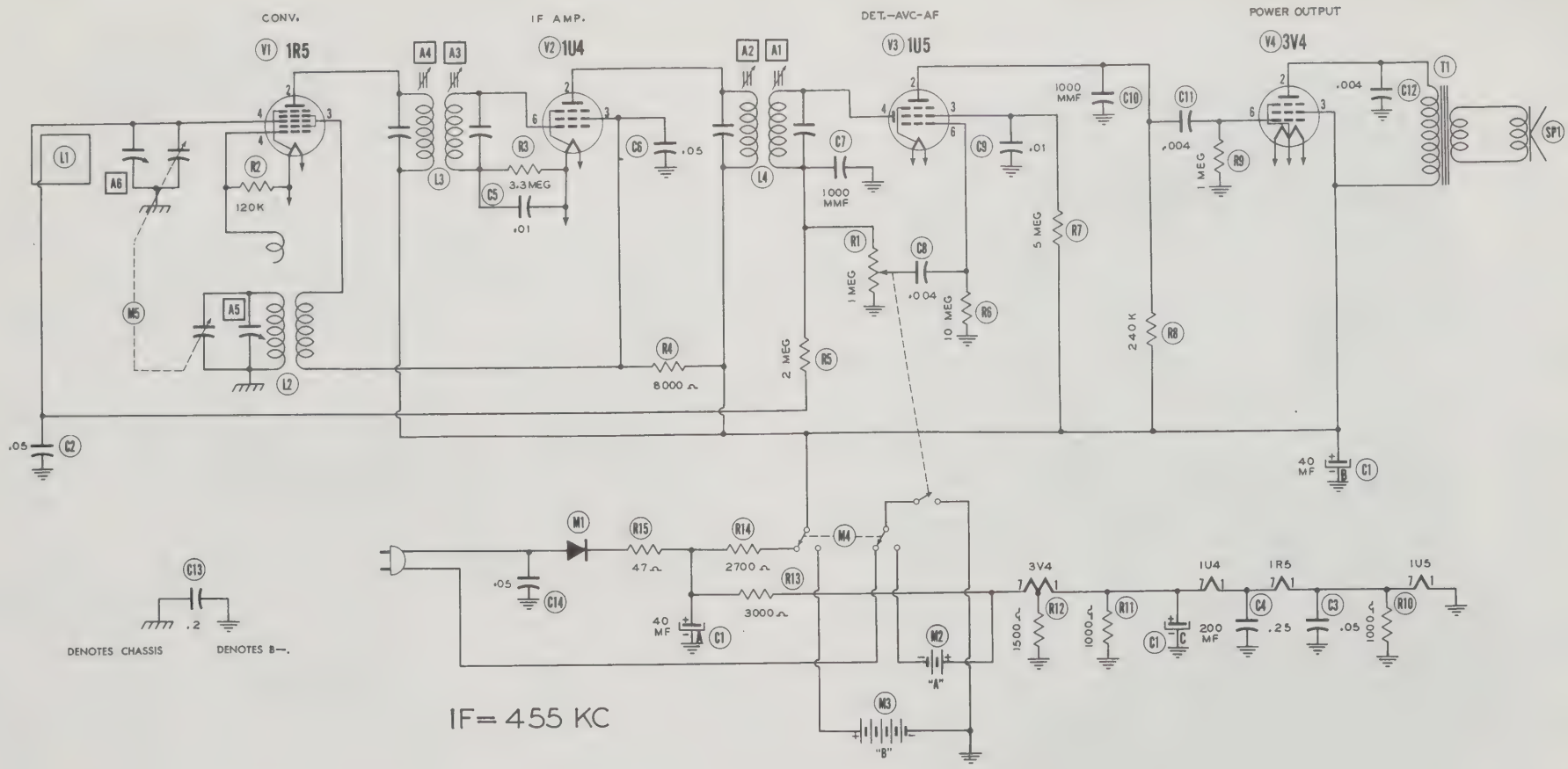
ITEM No.	VOLTAGE	JEWEL PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	7.5V "A"		717						
M3	90V "B"			490			N60		

MISCELLANEOUS

ITEM No.	PART NAME	JEWEL PART No.	NOTES
M4	Switch		AC/DC-Battery
M5	2 Gang Var. Cap.		(26-462MMF, 35-213MMF)

CHASSIS—BOTTOM VIEW





V & R TAKEN IN AC/DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	1.4VDC	80VDC	60VDC	§-6.6VDC	1.4VDC	-.1VDC	2.6VDC
V 2	1U4	2.6VDC	80VDC	60VDC	-.1VDC	2.6VDC	.1VDC	4VDC
V 3	1U5	0V.	60VDC	3.5VDC	-.2VDC	0V.	-.1VDC	1.4VDC
V 4	3V4	4VDC	75VDC	80VDC	0V.	5.2VDC	0V.	6.4VDC

§ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	•	†2.7KΩ	†11KΩ	120KΩ	•	3 Meg.	•
V 2	1U4	•	†2.7KΩ	†11KΩ	3 Meg.	•	3.3 Meg.	•
V 3	1U5	•	†240KΩ	†5 Meg.	1 Meg.	0Ω	10 Meg.	•
V 4	3V4	•	†3.3KΩ	†2.7KΩ	Inf.	•	1 Meg.	•

† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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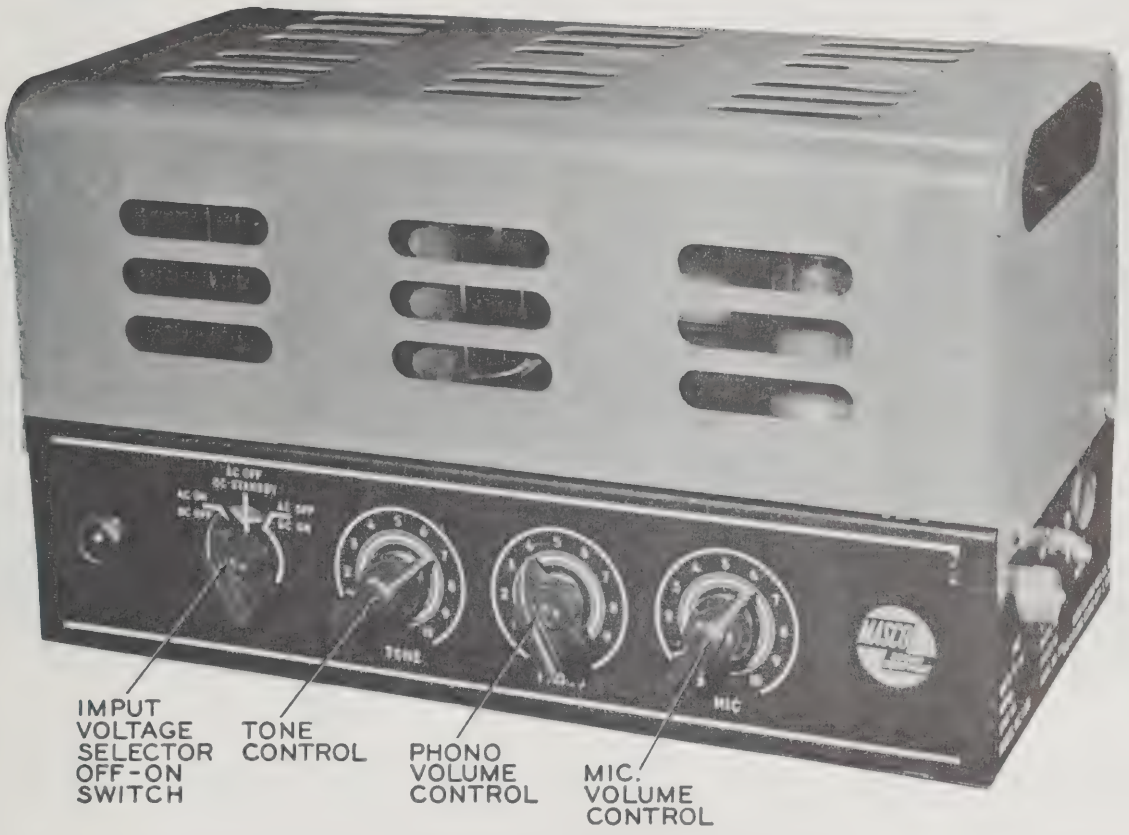
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MASCO
MODELS MC-126, MC-126P



MASCO
MODELS MC-126, MC-126P

MASCO MODEL MC-126

TRADE NAME	Masco, Models MC-126, MC-126P
MANUFACTURER	Mark Simpson Mfg. Co. Inc., 32-28 49th St., Long Island City, New York
TYPE SET	AC or Battery Operated Mobile Audio Amplifier
TUBES (FIVE)	Types 7B4 or 6SF5 Mic. Pre Amp., 6SL7GT AF Amp.-Phase Inv., (2) 6V6GT Power Output, 7Z4 Rectifier
POWER SUPPLY	110-120 Volts AC or 6 Volt Storage Battery
RATING	2.3 Amp. at 117 Volts AC or 8 Amp. at 6 Volts DC

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MASCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1A	Mic. Pre.-Amp.	7B4	7B4	5AC	
B	Mic. Pre.-Amp.	6SF5	6SF5	6AB	
V2	AF Amp. Phase Inv.	6SL7GT	6SL7GT	8BD	
V3	Power Output	6V6GT	6V6GT	7AC	
V4	Power Output	6V6GT	6V6GT	7AC	
V5	Rectifier	7Z4	7Z4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MASCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	10	450		AF2222J		UP1111145		TVL-4760	▪ Filter
B	10	450							■ Filter
C	10	450							▲ Decoupling
F	10	450							Decoupling
C2	10	50		PRS50/10		BR105		TVA-1304	Output Cathode
C3	10	50		PRS50/10		BR105		TVA-1304	AF Amp. Cath.
C4	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C5	.01	600		P688-01	D6-103	PTE6S1	811-01	6TM-S1	Audio Coupling
C6	.01	600		P688-01	D6-103	PTE6S1	811-01	6TM-S1	Audio Coupling
C7	.01	600		P688-01	D6-103	PTE6S1	811-01	6TM-S1	Audio Coupling
C8	.01	600		P688-01	D6-103	PTE6S1	811-01	6TM-S1	Tone Comp. *
C9	.02	1600		P1688-02		PTE16S2		MB-S2	Buffer
C10	.5	200		P288-5		GT2P5		2TM-P5	Hash Filter
C11	470			SI470	D6-471	5W5T5	GP2K-470	19C15	Fil. Bypass
C12	.05			P688-05	DF-503	PTE6S5		6TM-S5	Fil. Bypass *

* Not used in all models.

CONTROLS

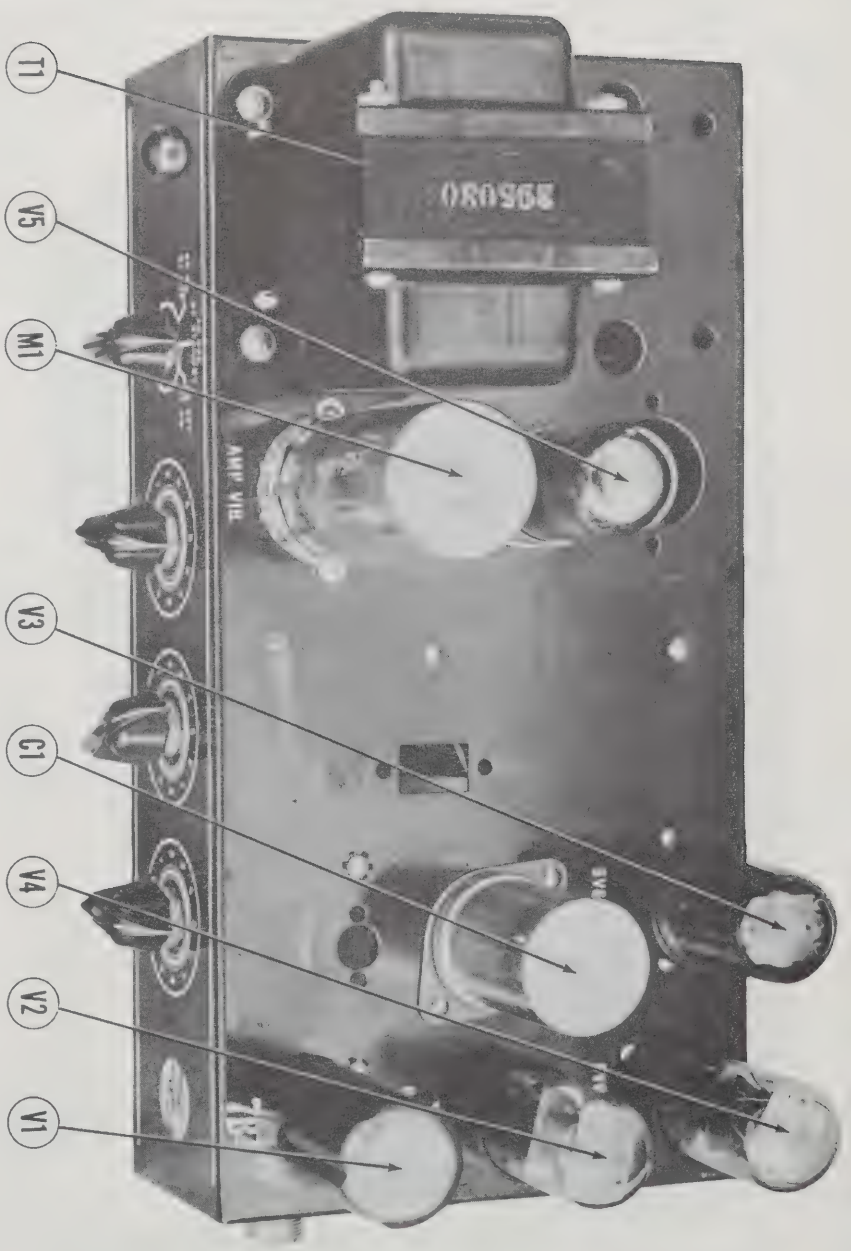
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½		Q13-133	AM-60-Z	B-60	Tone control
B	Shaft			Not Req.	RS-2	Not Req.	Attach to R1A per instructions
R2A	500KΩ	½		Q13-133	AM-60-Z	B-60	Phono volume control
B	Shaft			Not Req.	RS-2	Not Req.	Attach to R2A per instructions
R3A	500KΩ	½		Q13-133	AM-60-Z	B-60	Mic. volume control
B	Shaft			Not Req.	RS-2	Not Req.	Attach to R3A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	IDENTIFICATION CODES
R4	2.7 Meg.	½		BTS-2.7 Meg.	Mic. Pre-Amp. Grid
R5	240KΩ	2		BTB-220K	Mic. Pre-Amp. Plate
R6	27KΩ	½		BTS-27K	Mic. Pre-Amp. Plate Decoupling
R7	240KΩ	2		BTB-270K	Isolation
R8	240KΩ	2		BTB-220K	Isolation
R9	4700Ω	½		BTS-4700	AF Amp. Cathode
R10	240KΩ	2		BTB-220K	AF Amp. Plate
R11	1000Ω	½		BTS-1000	Phase Inv. Cathode
R12	100KΩ	½		BTS-100K	Phase Inv. Plate
R13	10KΩ	½		BTS-10K	Phase Inv. Grid
R14	240KΩ	2		BTB-220K	Output Grid
R15	240KΩ	½		BTS-220K	Output Grid
R16	270Ω	1		BTA-270	Output Cathode
R17	27KΩ	½		BTS-27K	Decoupling
R18	5000Ω	1		BTA-4700	Filter
R19	4700Ω	1		BTA-4700	Buffer-See Note 1
R20	150Ω	½		BTS-150	Hash Suppressor
R21	150Ω	½		BTS-150	Hash Suppressor

Note 1. Some models use two 12KΩ, 1 watt resistors in parallel in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.3A	620VCT .070ADC	6.3VAC @ 2.5A					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	4500Ω CT	15Ω Tap@ 8Ω, 4Ω	510Ω CT	.9Ω Tap@ .7Ω, .4Ω		A3872 ①		RO-304 ①	① Drill New Mtg. Hole

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA				INSTALLATION NOTES
				MASCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Int.	6VDC	115 ∿					

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MASCO PART No.		
M2	Bayonet	6-8	.15	Brown			Type #47

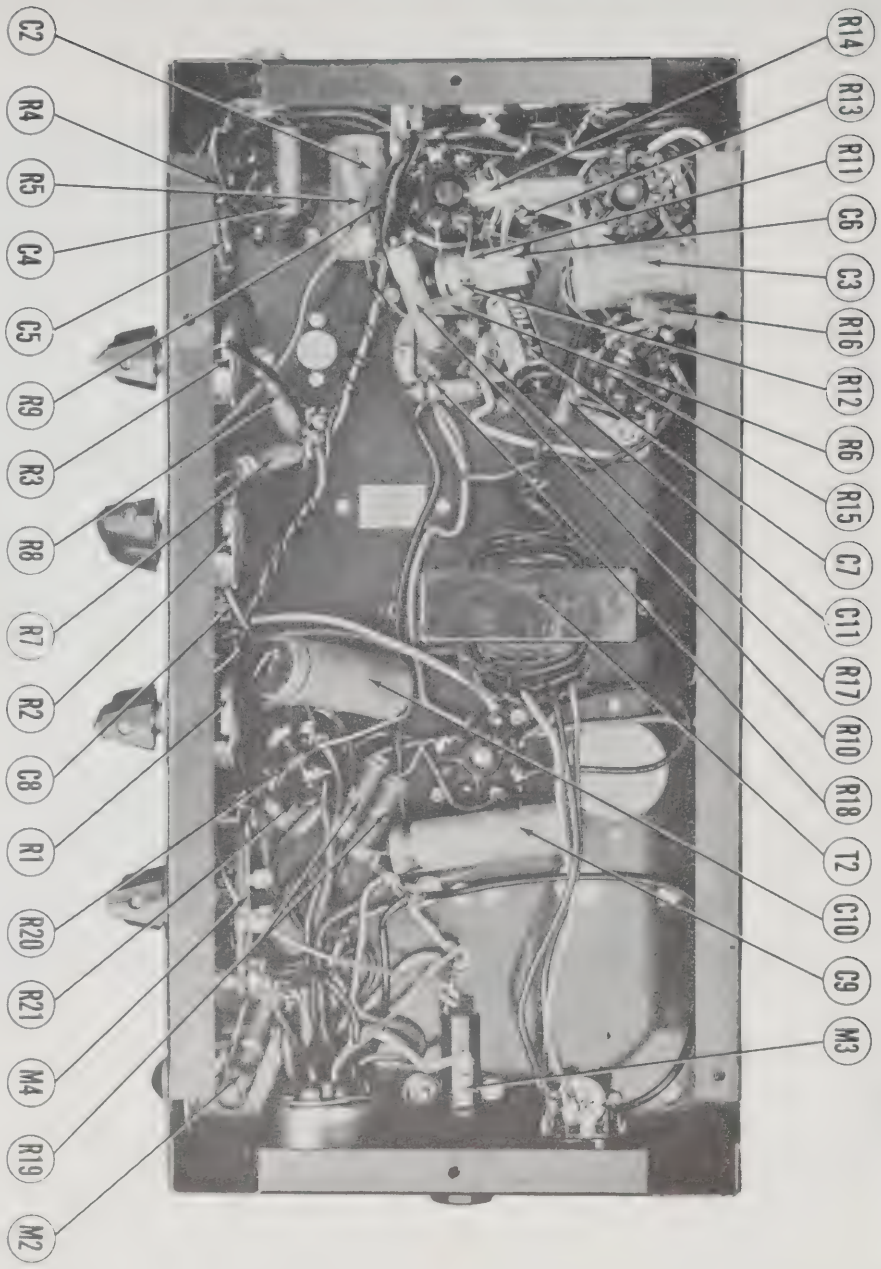
MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
M3	Fuse		15 Amp.
M4	Switch		Power selector

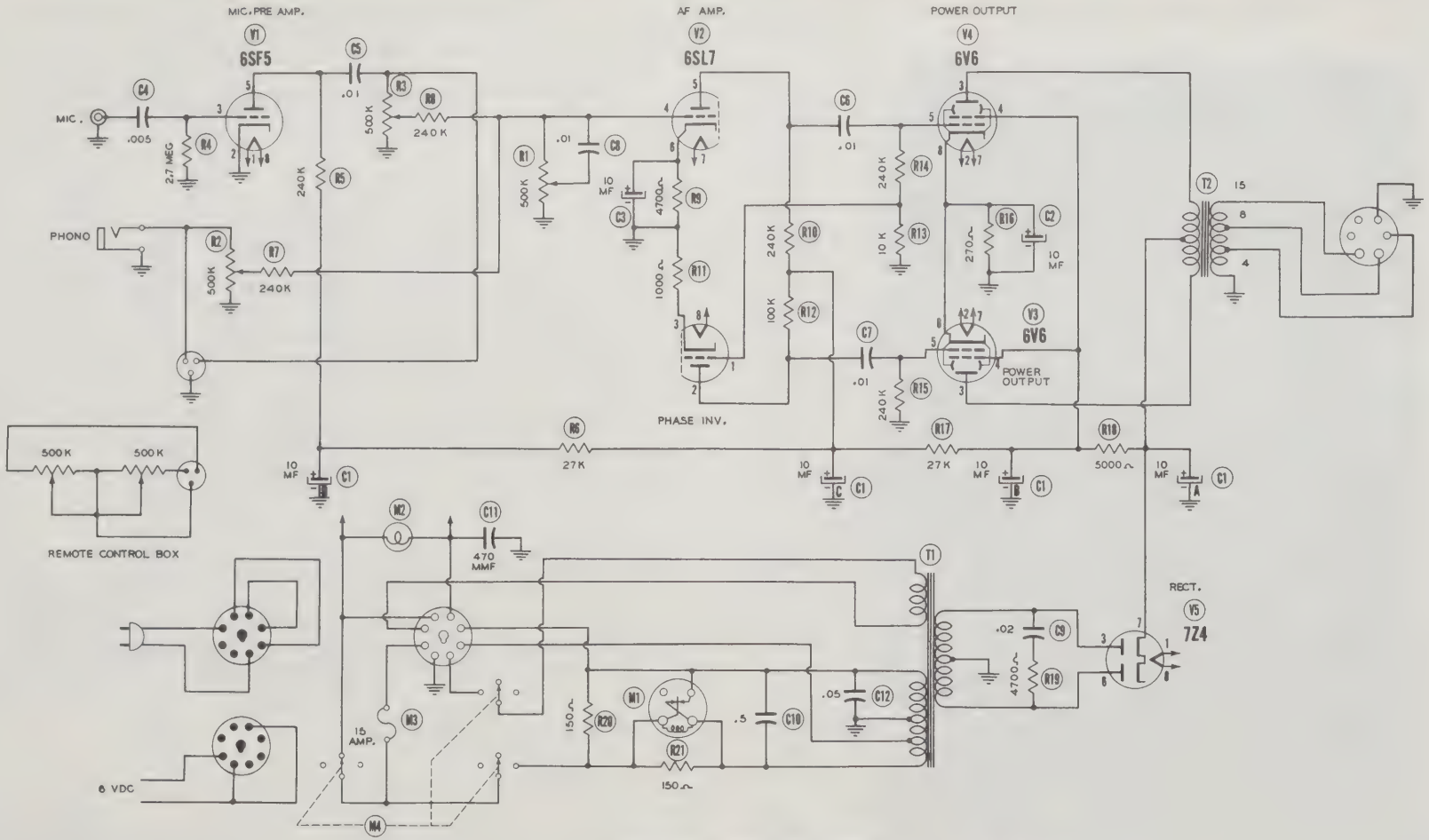
PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA						REMARKS
	MASCO PART No.	ASTATIC PART No.		SHURE PART No.			
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE		
M5		L-71A	Opt.	W58A	Opt.		Model MC-126P Only

CHASSIS—BOTTOM VIEW



MASCO MODELS MC-126, MC-126P



POWER SWITCH IN "AC-ON--DC-OFF" POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7B4	¶	90VDC	0V.	0V.	0V.	-.6VDC	0V.	¶
V 2	6SL7GT	0V.	125VDC	1.2VDC	0V.	135VDC	2VDC	¶	¶
V 3	6V6GT	0V.	¶	310VDC	300VDC	0V.	0V.	¶	18VDC
V 4	6V6GT	0V.	¶	310VDC	300VDC	0V.	0V.	¶	18VDC
V 5	7Z4	¶	0V.	300VAC	0V.	0V.	300VAC	320VDC	¶

¶ 6.3VAC MEASURED ACROSS FILAMENTS.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	7B4	Inf.	†300KΩ	Inf.	Inf.	Inf.	2.7 Meg.	0Ω	Inf.
V 2	6SL7GT	10KΩ	†130KΩ	1000Ω	100KΩ	†270Ω	4.7KΩ	Inf.	Inf.
V 3	6V6GT	0Ω	Inf.	†255Ω	†5KΩ	240KΩ	Inf.	Inf.	270KΩ
V 4	6V6GT	0Ω	Inf.	†255Ω	†5KΩ	250KΩ	Inf.	Inf.	270KΩ
V 5	7Z4	Inf.	0Ω	130Ω	Inf.	Inf.	130Ω	80KΩ	Inf.

† MEASURED FROM PIN 7 OF V5.

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

PHOTOFACT* Folder

MOTOROLA MODELS
19F1, 19K1 (CH. TS-67,
RADIO CH. HS-230)

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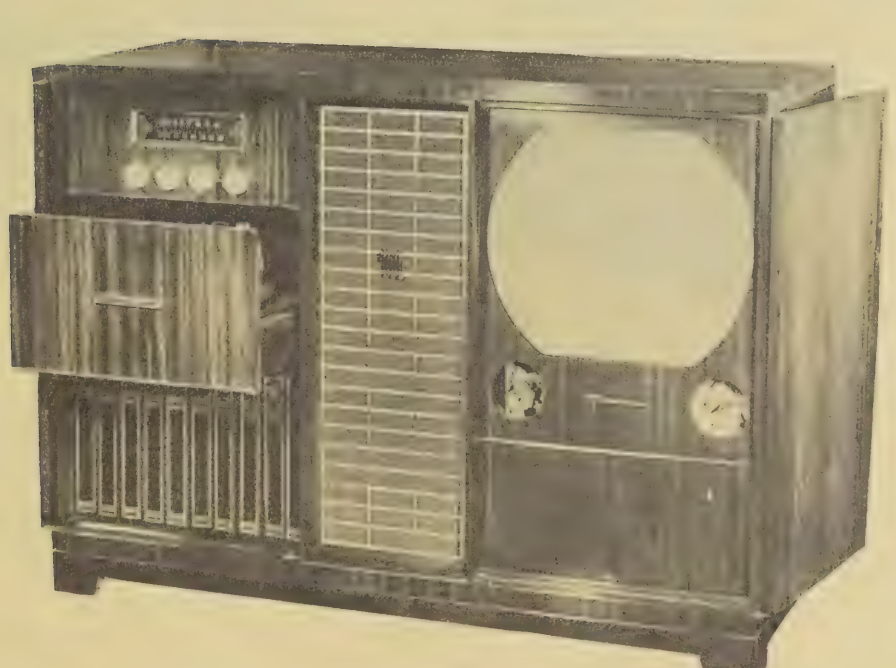
MOTOROLA MODELS
19F1, 19K1 (CH. TS-67,
RADIO CH. HS-230)



MODEL 19F1

HOWARD W. SAMS & CO., INC. • Indianapolis, Indiana

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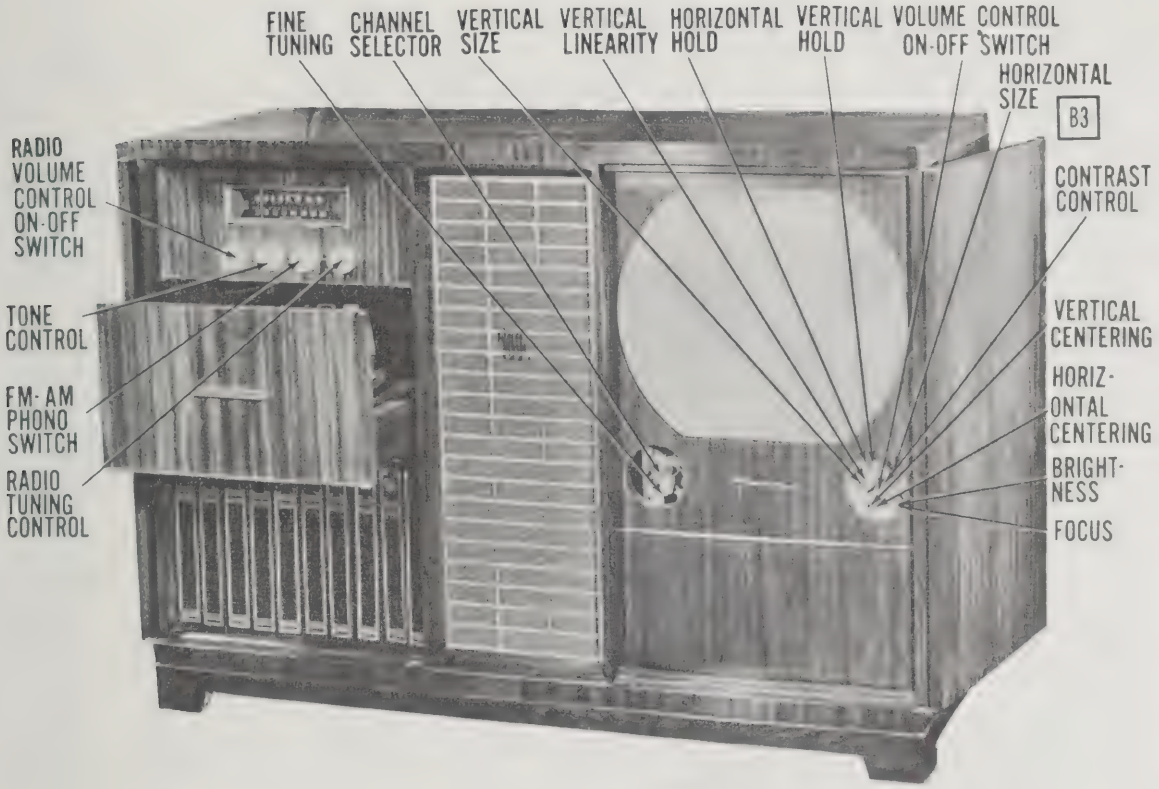
Date 11/50 Set No. 111—Folder No. 9



MOTOROLA MODEL 19F1

TRADE NAME	Motorola, Models 19F1, 19K1 (Ch. TS-67 and Radio Ch. HS-230)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Illinois
TYPE SET	TV-AM-FM-Phono Combination Receiver (Model 19K1 "TV Only")
TUBES	Thirty Three (Model 19F1), Twenty Four (Model 19K1)
POWER SUPPLY RATINGS	110-120 Volts AC-60 Cycle 2.7 Amp. at 117 Volts AC, 1.3 Amp. at 117 Volts AC
TUNING RANGE—	TV Channels 2 thru 13, FM 88-108MC, AM 535-1620KC

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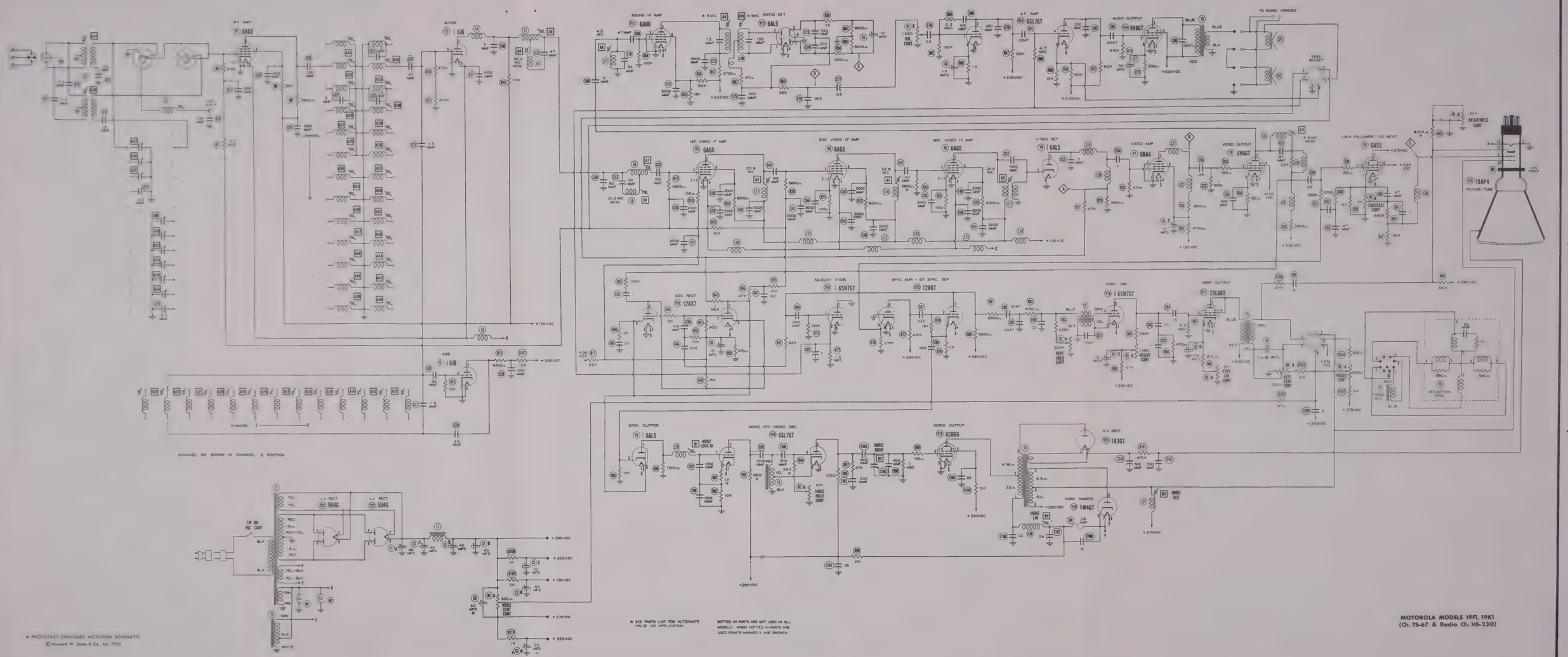
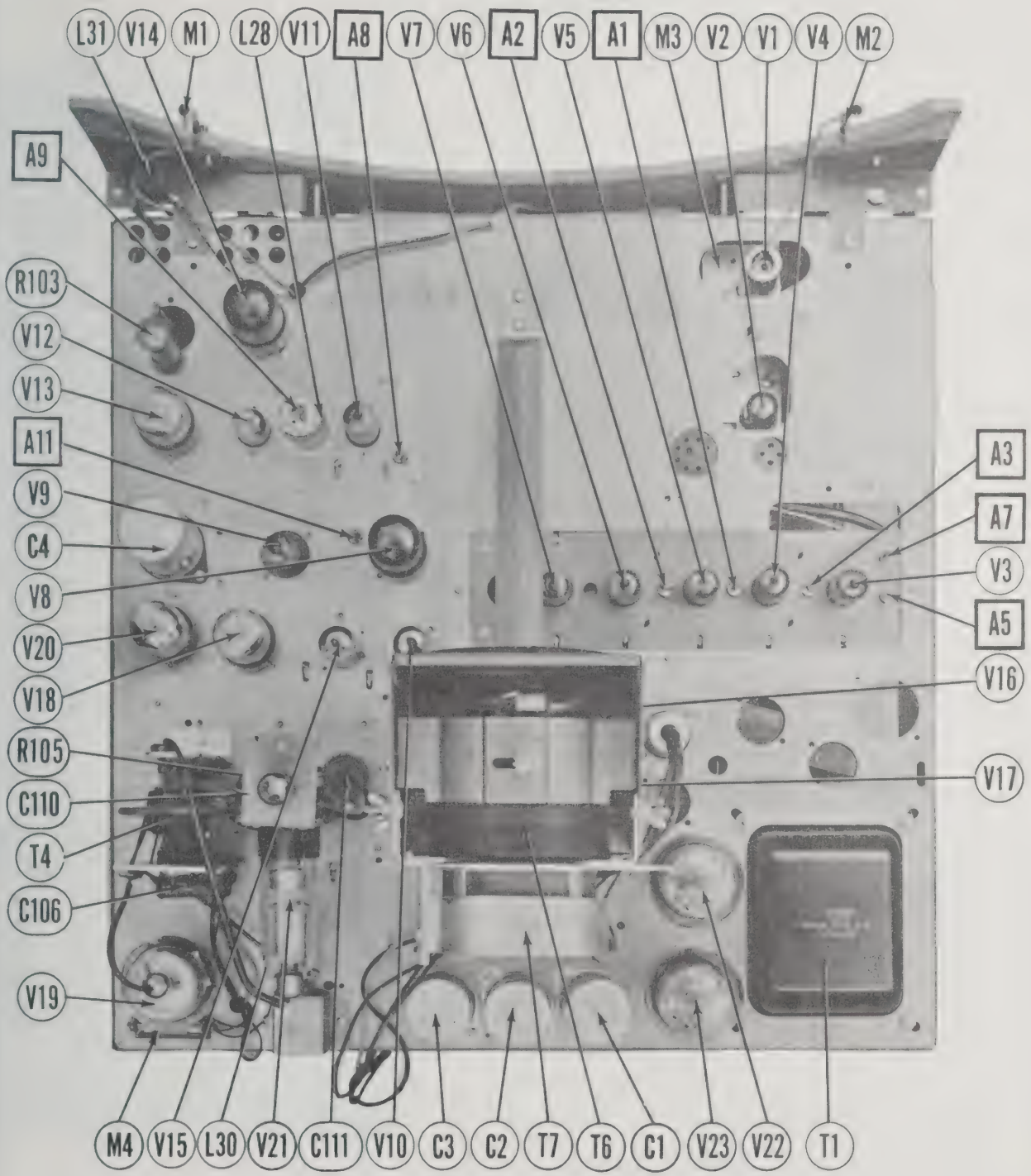
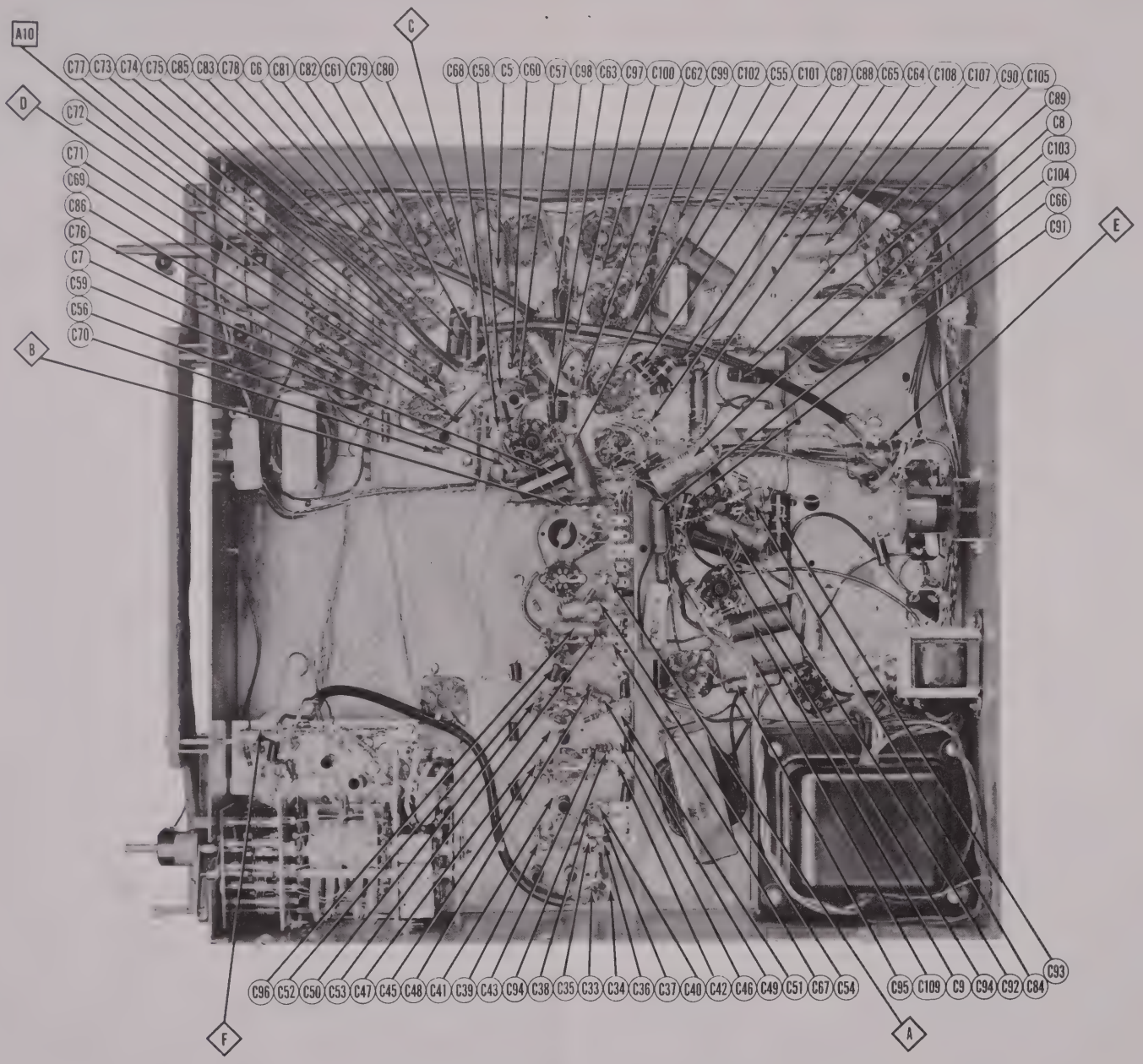
MOTOROLA MODELS 19F1, 19K1
(Ch. TS-67 & Radio Ch. HS-230)

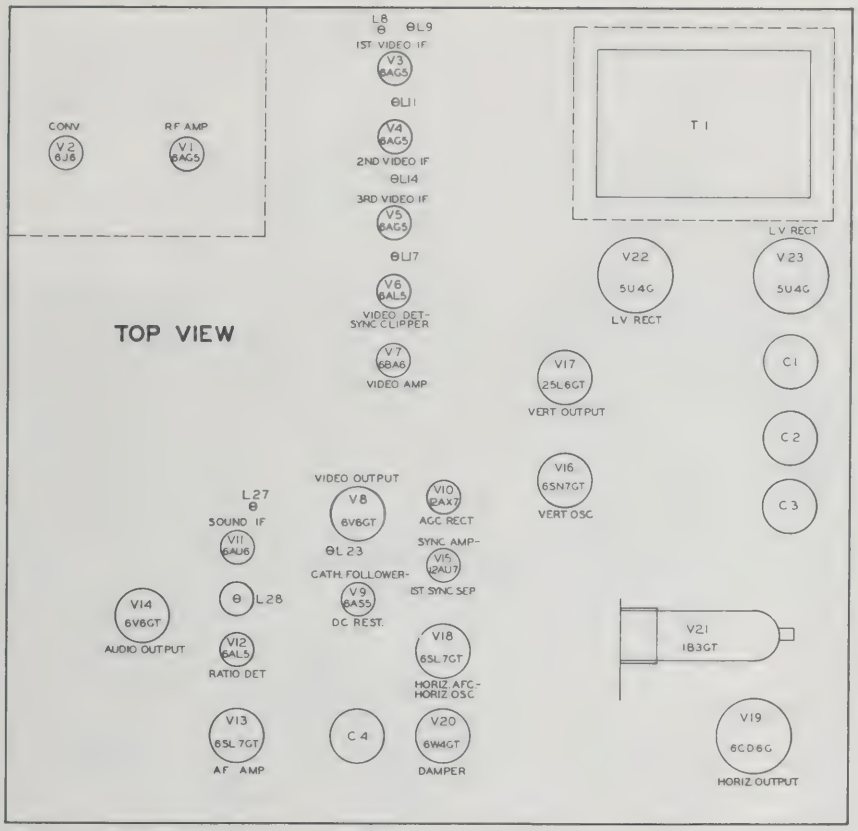

MOTOROLA MODELS 19FI, 19K1
(Ch. T5-67 & Radio Ch. HS-230)
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1950
CHANNEL SW. SHOWN IN CHANNEL 2 POSITION
* SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
MOTOROLA MODELS 19FI, 19K1
(Ch. T5-67 & Radio Ch. HS-230)

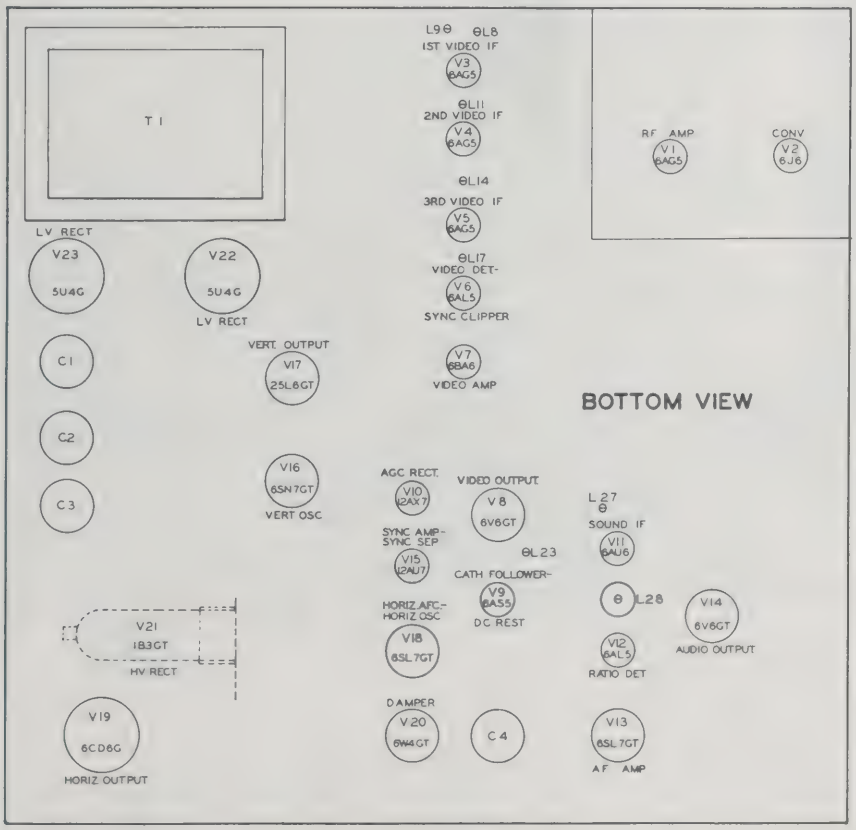


TV CHASSIS TOP VIEW

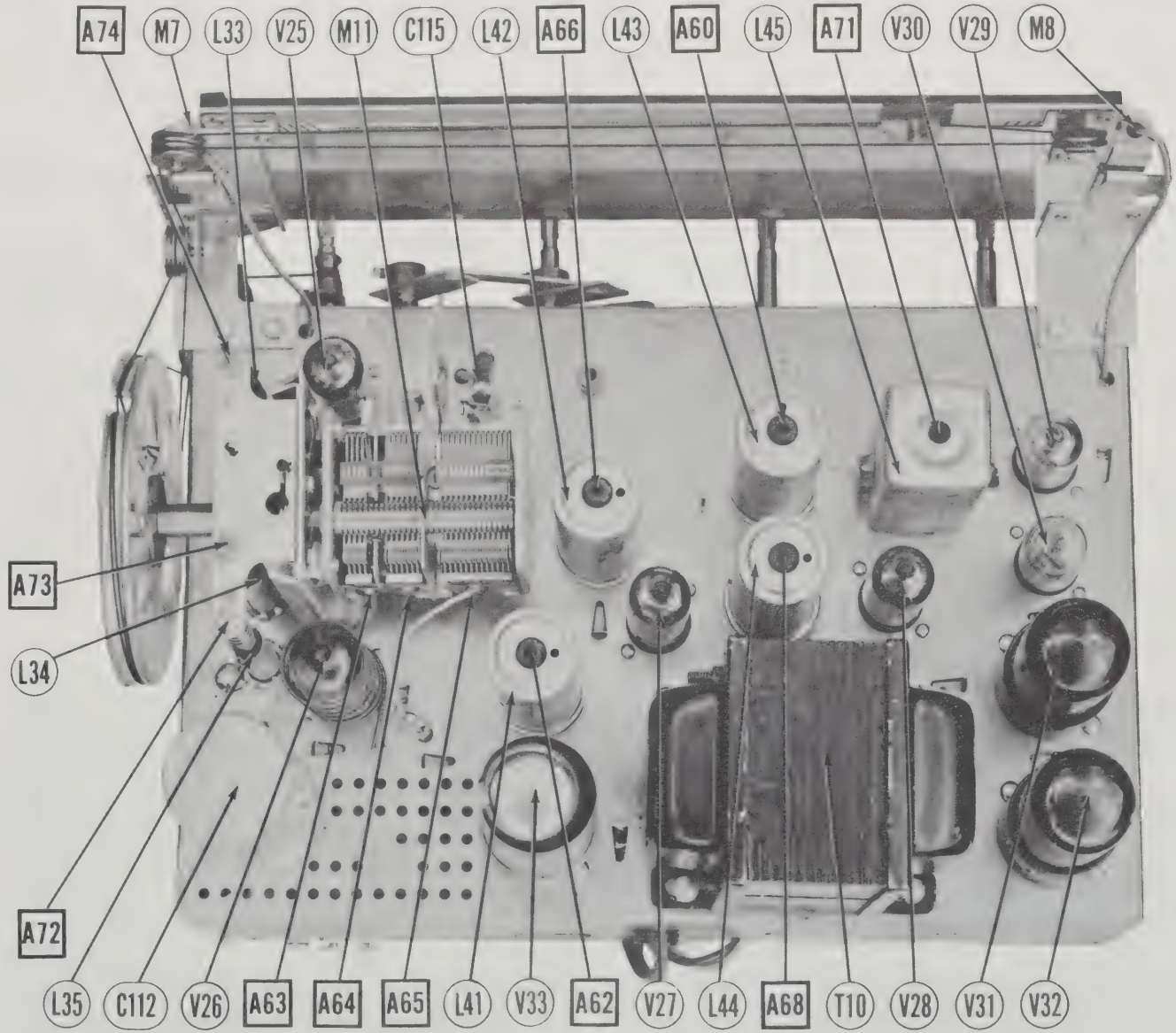


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

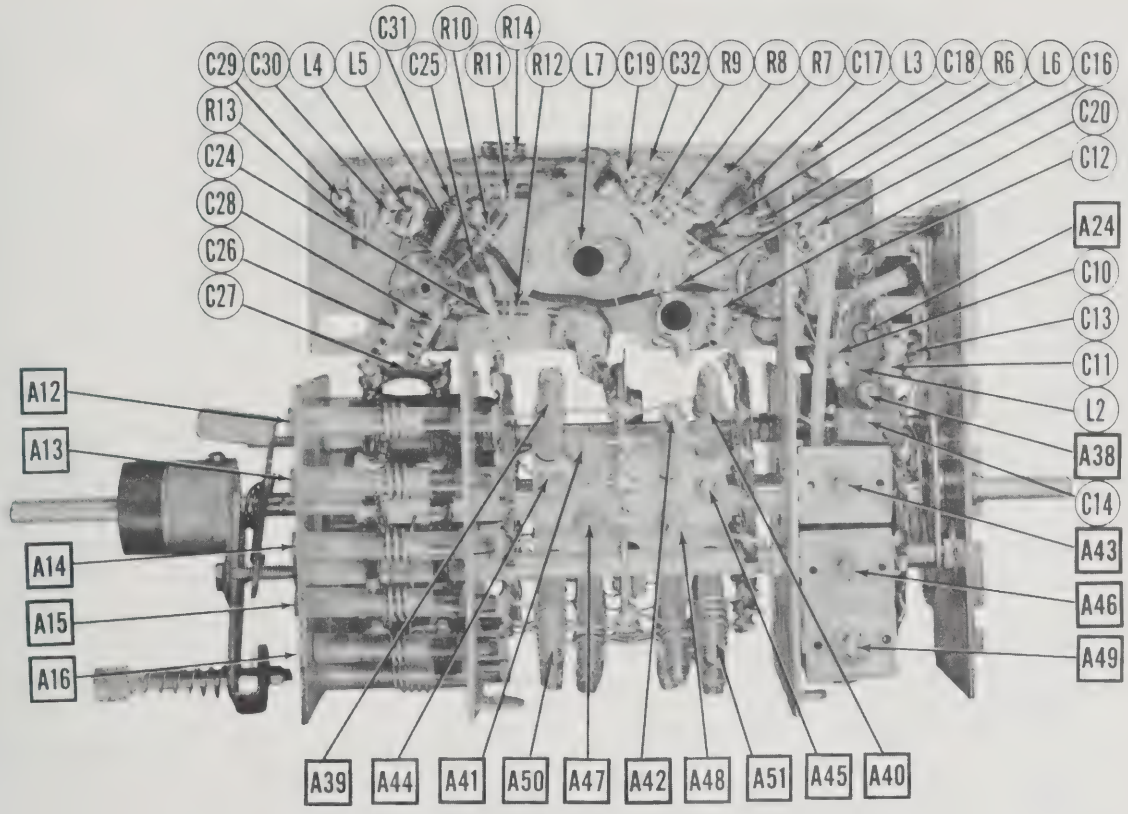




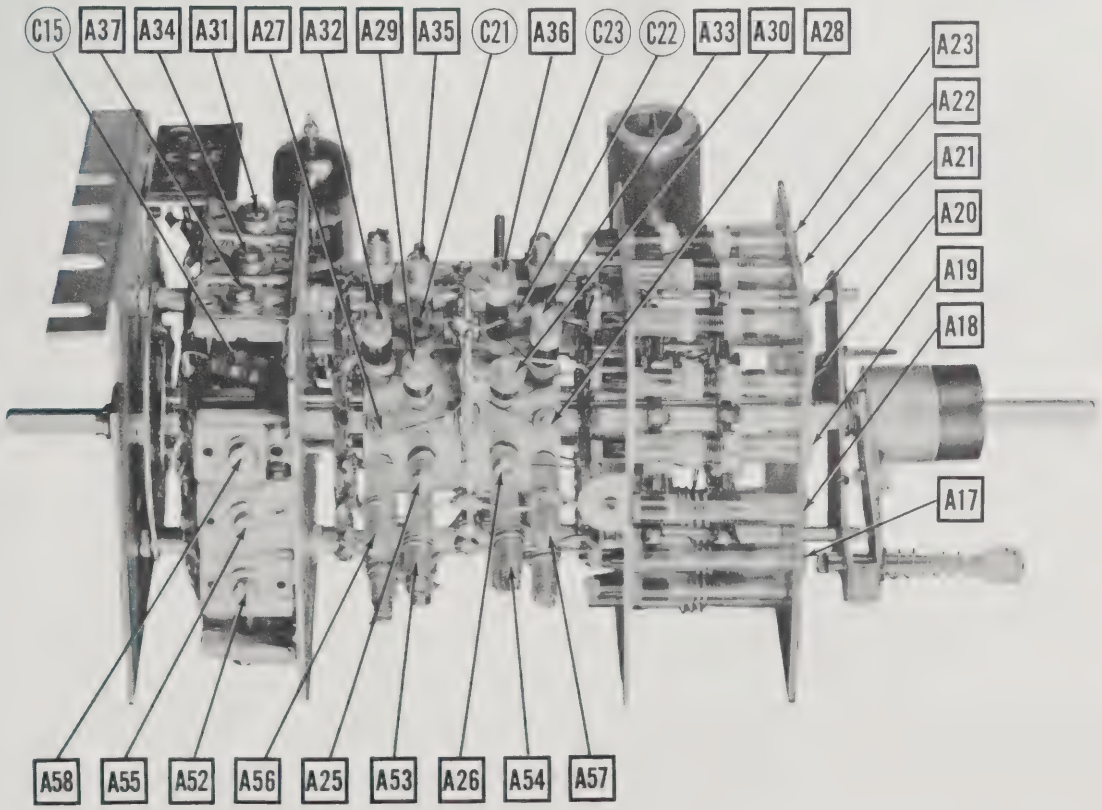
TUBE PLACEMENT CHART



RADIO CHASSIS-TOP VIEW



TV RF TUNER



TV RF TUNER

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If receiver is to be aligned with picture tube removed, avoid coming in to contact with high voltage components that are exposed.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace with a 6J6 with pin 1 removed to prevent erroneous indications.
Remove the AGC tube (V10) from its socket.
Connect the positive terminal of 4.5 volt battery to the junction of R50 and R49 and negative terminal to pin 1 of AGC tube (V10).
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 1 (Grid) of 6AG5 (V3). Low side to chassis.	Not used	22.8MC	Any	Use VTVM. DC Probe to Point (A). Common to chassis.	A1	Adjust for maximum deflection. Attenuate signal generator to maintain a -1 volt reading.
2.	.001MFD	"	"	24.4MC	"	"	A2	"
3.	.001MFD	"	"	25.9MC	"	"	A3	"
4.	.001MFD	High side to pin 5 (Grid) of 6J6 (V2). Low side to chassis.	"	20.4MC	"	"	A4	Adjust for MINIMUM deflection.
5.	.001MFD	"	"	21.9MC	"	"	A5	"
6.	.001MFD	High side to pin 1 (Grid) of 6AG5 (V3). Low side to chassis.	24MC (10MC SWP)	21.9MC 22.8MC 26.4MC	"	Vert. Amp. to Point (B). Low side to chassis.		Check for response curve similar to figure 1. Marker should not be more than 30% from top of curve. If necessary, SLIGHTLY retouch A1 thru A4 for proper response.
7.	.001MFD	High side to pin 5 (Grid) of 6J6 (V2). Low side to chassis.	"	20.4MC 21.9MC 22.8MC 26.4MC	"	"	A6, A7	Adjust for response curve similar to figure 2. The 26.4MC marker should be at 50% response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.001MFD	High side to pin 1 (Grid) of 6BA6 (V7). Low side to chassis.	4.5MC (Unmod.)	Any	DC Probe to Point (C). Common to chassis.	A8, A9	Adjust for maximum deflection.
9.	.001MFD	"	"	"	DC Probe to Point (D). Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.001MFD	High side to pin 1 (Grid) of 6BA6 (V7). Low side to chassis.	4.5MC (450KC Sweep)	4.5MC	Any	Vert. Amp. to Point (C). Low side to chassis.	A8, A9	Disconnect stabilizer capacitor C5. Adjust for maximum amplitude and symmetry as per figure 3.
9.	.001MFD	"	"	"	"	Vert. Amp. to Point (D). Low side to chassis.	A10	Reconnect capacitor C5. Adjust A10 to place 4.5MC at center of crossover lines as per figure 4. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.001MFD	High side to pin 1 (Grid) of 6BA6 (V7). Low side to chassis.	4.5MC	Any	DC Probe thru detector probe as shown in figure 5 to Point (E). Common to chassis.	A11	Adjust for minimum deflection.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace with original 6J6 in its socket.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Direct	Across antenna terminals.	Not used	237.65MC	13	Vert. Amp. to Point (F). Low side to chassis.	A12	Adjust for zero beat indication on scope. Zero beat is indicated by the sharp collapsing of pattern.
12.	Direct	"	"	231.65MC	12	"	A13	"
				225.65MC	11		A14	
				219.65MC	10		A15	
				213.65MC	9		A16	
				207.65MC	8		A17	
				201.65MC	7		A18	
				109.65MC	6		A19	
				103.65MC	5		A20	
				93.65MC	4		A21	
				87.65MC	3		A22	
				81.65MC	2		A23	

TV ALIGNMENT INSTRUCTIONS (CONT.)

RF AND ANTENNA ALIGNMENT

Connect the signal generator to the antenna terminals through two resistors. The low side of the generator should be connected through 150Ω. The high side should be connected through a resistor of 150Ω minus the signal generator impedance. For instance, if the the generator impedance is 50Ω, the resistor should be 100Ω.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	See instr. above	Across antenna terminals.	86MC	6	DC Probe to Point (A). Common to chassis.	A24	Adjust for maximum deflection.
14.	"	"	"	"	"	A25, A26	Unscrew A25 until the circuit is considerably detuned. Adjust A26 for maximum deflection. Then adjust A25 for maximum. DO NOT retune A26.
15.	"	"	80MC	5	"	A27, A28	Unscrew A27 until circuit is considerably detuned. Adjust A28 for maximum deflection. Then adjust A27 for maximum. DO NOT retune A28.
16.	"	"	70MC	4	"	A29, A30, A31	Unscrew A29 until circuit is detuned considerably. Adjust A30 for maximum deflection. Then adjust A29 for maximum. Do not retune A30. Adjust A31 for maximum deflection.
17.	"	"	64MC	3	"	A32, A33, A34	Unscrew A32 until circuit is detuned considerably. Adjust A33 for maximum deflection. Then adjust A32 for maximum. DO NOT retune A33. Adjust A34 for maximum deflection.
18.	"	"	58MC	2	"	A35, A36, A37	Unscrew A35 until circuit is detuned considerably. Adjust A36 for maximum deflection. Then adjust A35 for maximum. DO NOT retune A36. Adjust A37 for maximum deflection.
19.	"	"	214MC (Unmod.)	13	"	A38	Adjust for maximum deflection.
20.	"	"	"	"	"	A39, A40	Unscrew A39 until circuit is detuned considerably. Adjust A40 for maximum deflection. Then adjust A39 for maximum. DO NOT retune A40.
21.	"	"	208MC	12	"	A41, A42, A43	Unscrew A41 until circuit is detuned considerably. Adjust A42 for maximum deflection. Then adjust A41 for maximum. DO NOT retune A42. Adjust A43 for maximum deflection.
22.	"	"	202MC	11	"	A44, A45, A46	Unscrew A44 until circuit is detuned considerably. Adjust A45 for maximum deflection. Then adjust A44 for maximum. DO NOT retune A45. Adjust A46 for maximum deflection.
23.	"	"	196MC	10	"	A47, A46, A49	Unscrew A47 until circuit is detuned considerably. Adjust A48 for maximum deflection. Then adjust A47 for maximum. DO NOT retune A48. Adjust A49 for maximum deflection.
24.	"	"	190MC	9	"	A50, A51, A52	Unscrew A50 until circuit is detuned considerably. Adjust A51 for maximum deflection. Then adjust A50 for maximum. DO NOT retune A51. Adjust A52 for maximum deflection.
25.	"	"	184MC (Unmod.)	8	"	A53, A54, A55	Unscrew A53 until circuit is detuned considerably. Adjust A54 for maximum deflection. Then adjust A53 for maximum. DO NOT retune A54. Adjust A55 for maximum deflection.
26.	"	"	178MC	7	"	A56, A57, A58	Unscrew A56 until circuit is detuned considerably. Adjust A57 for maximum deflection. Then adjust A56 for maximum. DO NOT retune A57. Adjust A58 for maximum deflection.

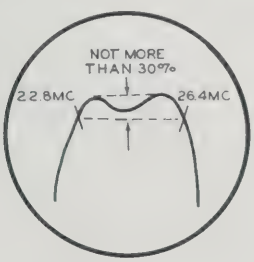


FIG. 1

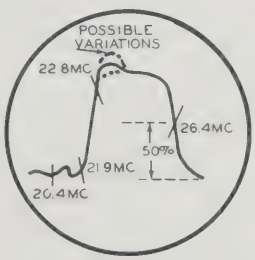


FIG. 2

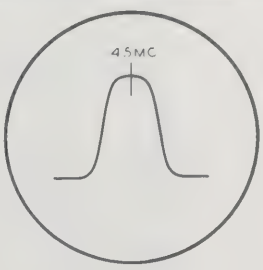


FIG. 3

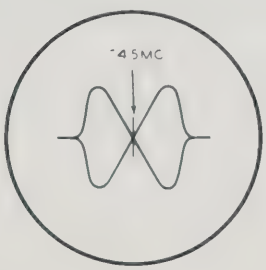


FIG. 4

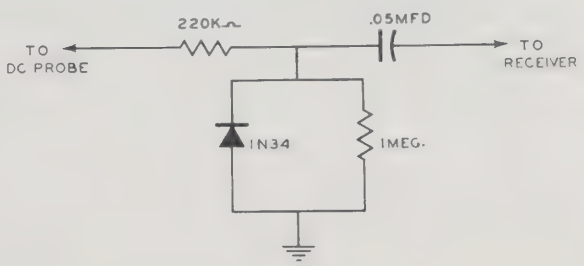


FIG. 5

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer to calibration mark at the left of "55" at the low frequency end of dial.

AM ALIGNMENT

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
27.	.1MFD	High side to pin 7 (Grid) of 6BA7 (V26). Low side to chassis.	455KC (400 ∿ Mod.)	AM (fully CCW)	Tuning gang fully open	Across voice coil	A59, A60, A61, A62	Adjust for maximum output.
28.	.1MFD	"	1620KC	"	"	"	A63	"
29.		Loop	1400KC	"	Tune for max. output	"	A64, A65	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (± 1%) resistors in series from Point G to chassis. The junction of these two resistors is alignment Point ◇I◇ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
30.	.001MFD	High side to pin 7 (Grid) of 6BA7 (V26). Low side to chassis.	10.7MC (Unmod.)	FM (1st position CW)	Tuning gang fully open	DC Probe to Point ◇G◇. Common to chassis.	A66, A67, A68, A69, A70	Adjust for maximum deflection. Attenuate signal generator to maintain a maximum -3 volts reading.
31.	.001MFD	"	"	"	"	DC Probe to Point ◇H◇. Common to Point ◇I◇	A71	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60 ∿ modulation and 450KC sweep. Use 120 ∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
30.	.001MFD	High side to pin 7 (Grid) of 6BA7 (V26). Low side to chassis.	10.7MC (450KC Sweep)	FM (1st position CW)	Tuning gang fully open	Vert. Amp. to Point ◇G◇. Low side to chassis.	A66, A67, A68, A69, A70	Disconnect stabilizer capacitor C113. Adjust for maximum amplitude and symmetry as per figure 6.
31.	.001MFD	"	"	"	"	Vert. Amp. to Point ◇H◇. Low side to chassis.	A71	Reconnect capacitor C113. Adjust A71 to place 10.7MC at center of crossover lines as per figure 7. SLIGHTLY retouch A70 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
32.	270Ω	High side thru 270Ω to "FM" antenna terminal.	105MC	FM (1st position CW)	105MC on dial	DC Probe to Point ◇G◇. Common to chassis.	A72	Adjust for maximum deflection.
33.	Turn tuning gang fully closed and turn A73 and A74 counter-clockwise until cores are at the bottom of pipe, then turn clockwise two turns.							
34.	270Ω	High side thru 270Ω to "FM" antenna terminals.	90MC	FM (1st position CW)	Tune for max. deflection	DC Probe to Point ◇G◇. Common to chassis.	A75, A76	Adjust for maximum deflection.
35.	270Ω	"	105MC	"	"	"	A73, A74	Adjust for maximum deflection. Repeat steps 34 and 35 until no further improvement can be made.

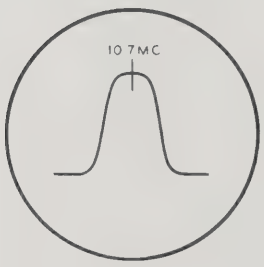


FIG. 6

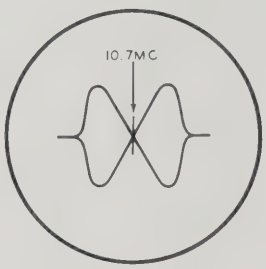
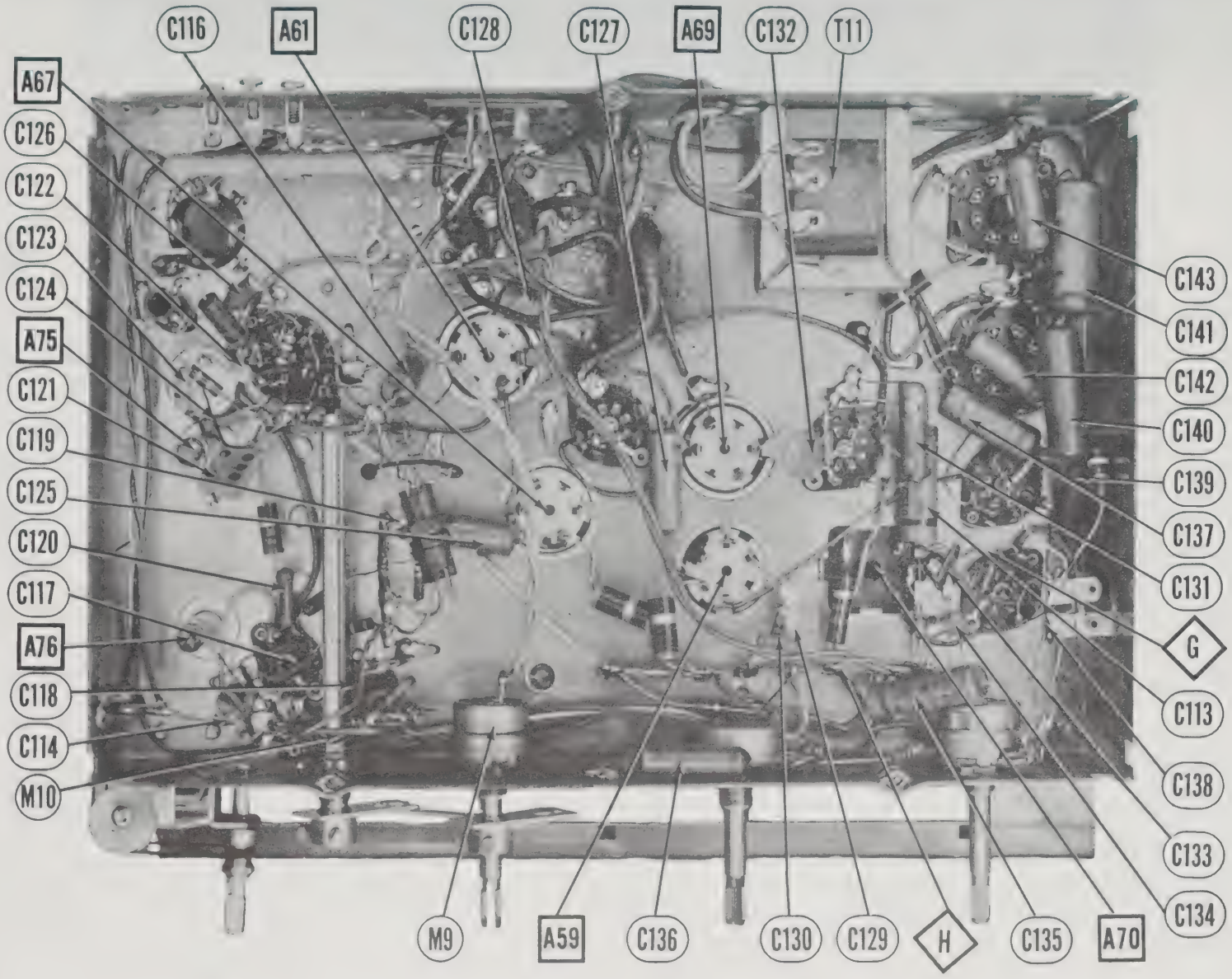


FIG. 7



RADIO CHASSIS-BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	-.7VDC	0V.	6.3VAC	0V.	110VDC	70VDC	0V.		
V 2	6J6	115VDC	100VDC	0V.	6.3VAC	-2.4VDC	§-6.4VDC	0V.		
V 3	6AG5	1VDC	4.2VDC	0V.	6.3VAC	130VDC	125VDC	4.2VDC		
V 4	6AG5	1.4VDC	1.8VDC	0V.	6.3VAC	130VDC	105VDC	1.8VDC		
V 5	6AG5	0V.	.4VDC	0V.	6.3VAC	130VDC	125VDC	.4VDC		
V 6	6AL5	0V.	-.1VDC	0V.	6.3VAC	.8VDC	1.6VDC	-.1VDC		
V 7	6BA6	-.6VDC	0V.	0V.	6.3VAC	50VDC	80VDC	0V.		
V 8	6V6GT	0V.	6.3VAC	155VDC	130VDC	0V.	0V.	0V.	4.6VDC	
V 9	6AS5	42VDC	4.8VDC	0V.	6.3VAC	4.8VDC	225VDC	270VDC		
V 10	12AX7	1.6VDC	.6VDC	3.5VDC	6.3VAC	6.3VAC	3.5VDC	.6VDC	1.6VDC	0V.
V 11	6AU6	-.5VDC	0V.	0V.	6.3VAC	225VDC	25VDC	0V.		
V 12	6AL5	-.1VDC	.1VDC	0V.	6.3VAC	.6VDC	0V.	-.6VDC		
V 13	6SL7GT	0V.	150VDC	1VDC	.5VDC	225VDC	27VDC	6.3VAC	0V.	
V 14	6V6GT	0V.	0V.	210VDC	225VDC	0V.	0V.	6.3VAC	13VDC	
V 15	12AU7	175VDC	17VDC	17VDC	6.3VAC	6.3VAC	235VDC	0V.	17VDC	0V.
V 16	6SN7GT	-.7VDC	0V.	5VDC	-25VDC -15VDC	125VDC 70VDC	0V.	6.3VAC	0V.	
V 17	25L6GT	0V.	25VAC	275VDC	275VDC	0V.	35VDC 0V.	0V.	18VDC 40VDC	
V 18	6SL7GT	-.1VDC	250VDC	5.6VDC	-25VDC -20VDC	160VDC	0V.	6.3VAC	0V.	
V 19	6CD6G	0V.	0V.	0V.	-30VDC	-27VDC	160VDC	6.3VAC	150VDC	TOP CAP *
V 20	6W4GT	0V.	0V.	570VDC	0V.	285VDC	0V.	570VDC	570VDC	
V 21	1B3GT	* DO NOT MEASURE.								
V 22	5U4G	120VDC	300VDC	0V.	300VAC	0V.	300VAC	0V.	300VDC	
V 23	5U4G	0V.	300VDC	0V.	300VAC	0V.	300VAC	0V.	300VDC	
V 24	19AP4	0V.	0V.	PIN 10 285VDC	PIN 11 33VDC 135VDC	PIN 12 6.3VAC				

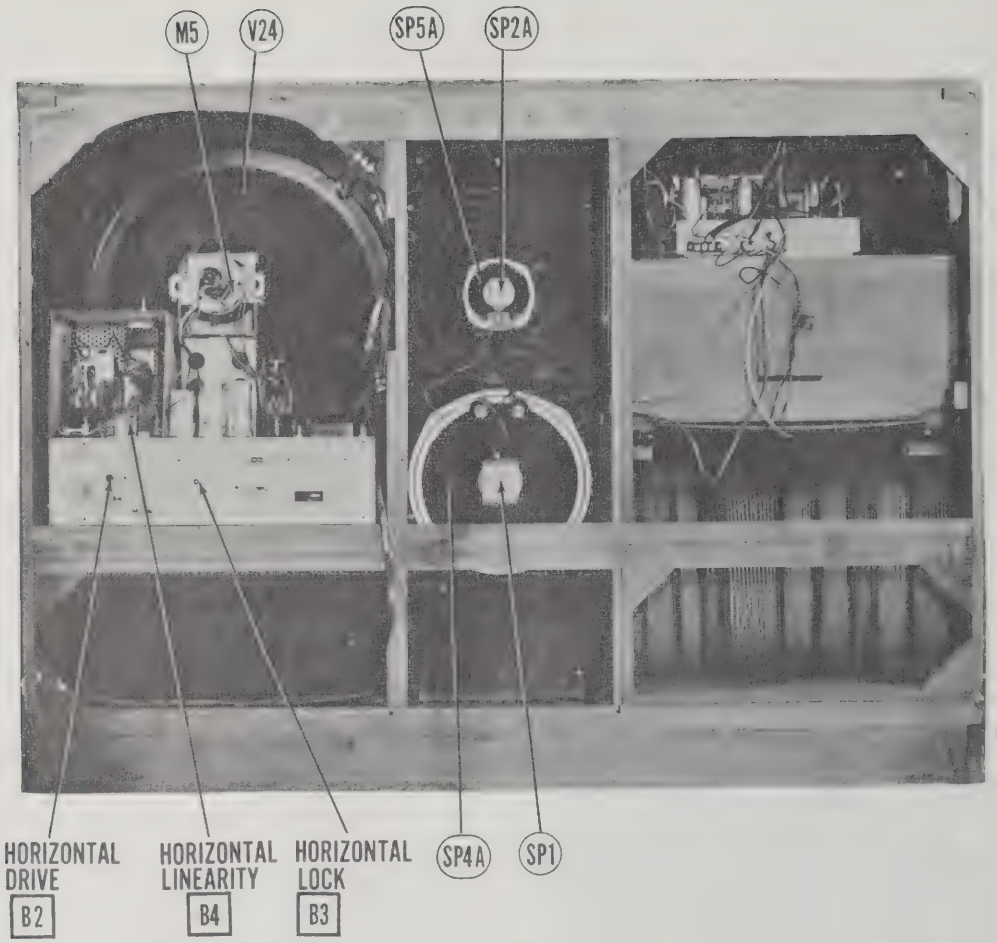
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	4.3 Meg.	0Ω	.1Ω	0Ω	†6.9KΩ	†36KΩ	0Ω		
V 2	6J6	†23KΩ	†13KΩ	0Ω	.1Ω	940KΩ	15KΩ	0Ω		
V 3	6AG5	1.1 Meg.	620Ω	0Ω	.1Ω	†3KΩ	†11KΩ	620Ω		
V 4	6AG5	1.1 Meg.	100Ω	0Ω	.1Ω	†3KΩ	†11KΩ	100Ω		
V 5	6AG5	5.6KΩ	100Ω	0Ω	.1Ω	†3KΩ	†11KΩ	100Ω		
V 6	6AL5	.4Ω	1.5KΩ	0Ω	.1Ω	10KΩ	1 Meg.	3.9KΩ		
V 7	6BA6	470KΩ	0Ω	0Ω	.1Ω	†12KΩ	†7.7KΩ	0Ω		
V 8	6V6GT	0Ω	.1Ω	†5KΩ	†3KΩ	1 Meg.	1 Meg.	0Ω	150Ω	
V 9	6AS5	2.5KΩ	830KΩ	0Ω	.1Ω	830KΩ	†1.2KΩ	†100Ω		
V 10	12AX7	1 Meg.	1 Meg.	18KΩ	.1Ω	.1Ω	18KΩ	1.1 Meg.	1 Meg.	0Ω
V 11	6AU6	100KΩ	0Ω	0Ω	.1Ω	†3.9KΩ	†14KΩ	0Ω		
V 12	6AL5	Inf.	Inf.	0Ω	.1Ω	7.8KΩ	0Ω	8.3KΩ		
V 13	6SL7GT	100KΩ	†83KΩ	1000Ω	6.2 Meg.	†83KΩ	15KΩ	.1Ω	0Ω	
V 14	6V6GT	0Ω	0Ω	†1.8KΩ	†1.2KΩ	470KΩ	Inf.	.1Ω	330Ω	
V 15	12AU7	†6.8KΩ	19KΩ	1000Ω	.1Ω	.1Ω	†470KΩ	0Ω	270KΩ	0Ω
V 16	6SN7GT	100KΩ	0Ω	1.5 Meg.	220KΩ 470KΩ	†600KΩ †1.6 Meg	53Ω	.1Ω	0Ω	
V 17	25L6GT	Inf.	4.4Ω	†640Ω	†640Ω	3.3 Meg.	3000Ω 2Ω	0Ω	3.5KΩ 470Ω	
V 18	6SL7GT	1.5KΩ	#570KΩ	11KΩ	39KΩ 49KΩ	#280KΩ	8.5Ω	.1Ω	0Ω	
V 19	6CD6G	Inf.	0Ω	0Ω	1 Meg.	1 Meg.	#280KΩ	.1Ω	†5KΩ	TOP CAP #60Ω
V 20	6W4GT	Inf.	Inf.	Inf.	Inf.	†50Ω	Inf.	#0Ω	#.2Ω	
V 21	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #450Ω
V 22	5U4G	30KΩ	3000Ω	Inf.	16Ω	Inf.	16Ω	Inf.	3000Ω	
V 23	5U4G	Inf.	3000Ω	Inf.	16Ω	Inf.	16Ω	Inf.	3000Ω	
V 24	19AP4	0Ω	150KΩ	PIN 10 †45Ω	PIN 11 30KΩ 7.5KΩ	PIN 12 .1Ω				

† MEASURED FROM PIN 2 OF V23.
# MEASURED FROM PIN 3 OF V20.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ADJUSTMENTS

Turn the set on and tune in a TV station preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal lock-in slug (B1) until the picture will remain in synchronization over the entire range of the hold control, with the possible exception of the extreme positions.

HORIZONTAL DRIVE, SIZE AND LINEARITY ADJUSTMENTS

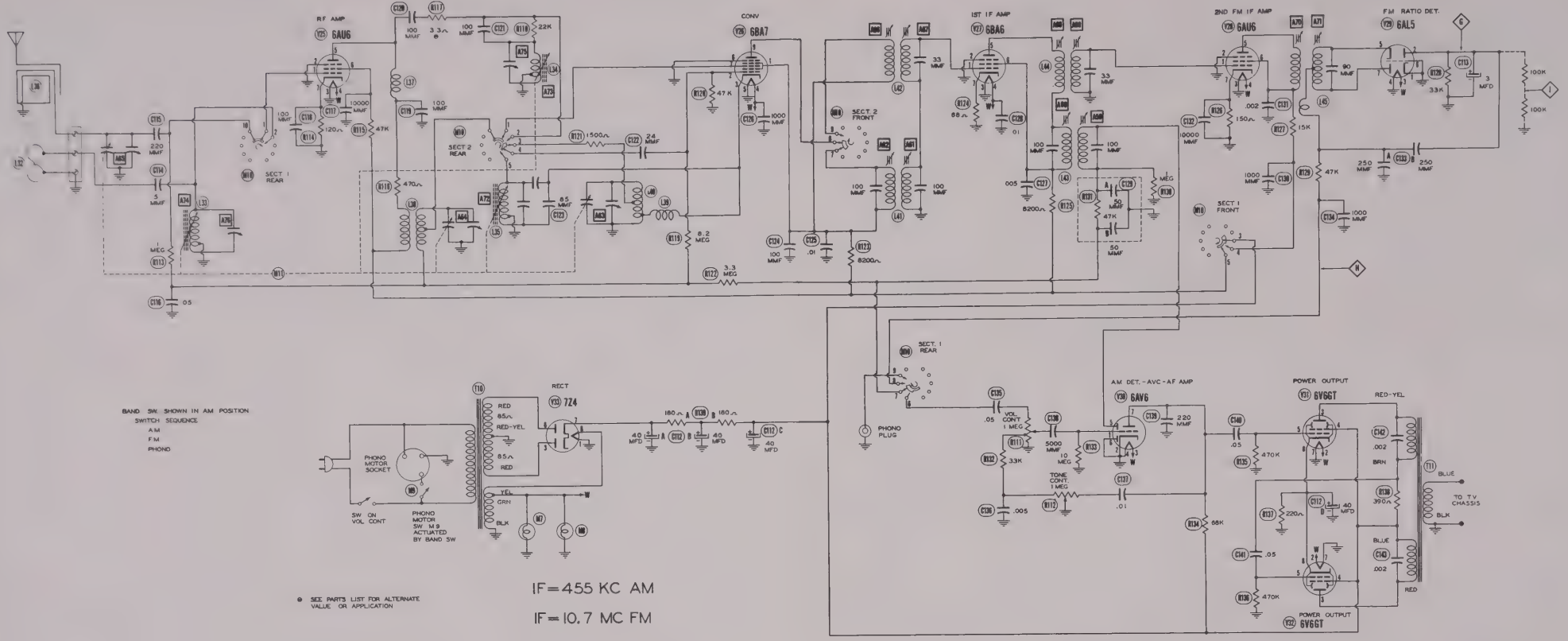
Turn the horizontal drive trimmer (B2) clockwise as far as possible without crowding the right side of the picture.

Adjust the horizontal size slug (B3) until picture fills the mask horizontally.

Adjust the horizontal linearity slug (B4) until picture is symmetrical from left to right. A slight readjustment of B2 may be necessary to obtain optimum results.

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type control knobs.
2. Remove nine 1/4" hex head screws holding rear cover in place. Remove rear cover.
3. Disconnect built-in antenna.
4. Remove antenna terminal strip.
5. Disconnect speaker.
6. Remove six 1/4" hex head screws from bottom of chassis. Remove chassis.
7. Remove eight 3/8" hex nuts holding both speaker to cabinet. Remove speakers.



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V25	6AU6	a -.2VDC	0V.	0V.	6.3VAC	†219VDC a215VDC	†110VDC a150VDC	F. 8VDC a. 6VDC		
V26	6BA7	100VDC	†F-2.7VDC a -.5VDC	.1VDC	6.3VDC	0V.	0V.	†-.5VDC a-.2VDC	0V.	100VDC
V27	6BA6	0V.	0V.	0V.	6.3VAC	90VDC	90VDC	.8VDC		
V28	6AU6	†0V.	0V.	0V.	6.3VAC	†105VDC	†103VDC	† 1VDC		
V29	6AL5	0V.	†-1VDC	6.3VAC	0V.	†-1.3VDC	0V.	†-1.3VDC		
V30	6AV6	-.5VDC	0V.	6.3VAC	0V.	a -.6VDC	0V.	130VDC		
V31	6V6GT	0V.	6.3VAC	205VDC	220VDC	0V.	210VDC	0V.	13VDC	
V32	6V6GT	0V.	6.3VAC	215VDC	220VDC	0V.	0V.	0V.	13VDC	
V33	7Z4	0V.	0V.	250VAC	0V.	0V.	250VAC	250VDC	7VAC	

‡ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V25	6AU6	100 a 5.3 Meg.	0Ω	0Ω	.1Ω	†830Ω	†47KΩ	130Ω †22KΩ a3Meg.	0Ω	†8.5KΩ
V26	6BA7	†8.5KΩ	47KΩ	2.2Ω	.1Ω	0Ω	0Ω	a3Meg.		
V27	6BA6	14.2Ω	0Ω	0Ω	.1Ω	†8.5KΩ	†8.5KΩ	68Ω		
V28	6AU6	.9Ω	0Ω	0Ω	.1Ω	† †15KΩ	† † 10KΩ	150Ω		
V29	6AL5	0Ω	33KΩ	.1Ω	0Ω	Inf.	0Ω	Inf.		
V30	6AV6	10 Meg.	0Ω	.1Ω	0Ω	1 Meg.	0Ω	†68KΩ		
V31	6V6GT	300	1Ω	†920Ω	†360Ω	470KΩ	†700Ω	0Ω	220Ω	
V32	6V6GT	Inf.	1Ω	†530Ω	†360Ω	470KΩ	Inf.	0Ω	220Ω	
V33	7Z4	0Ω	Inf.	85Ω	Inf.	Inf.	Inf.	85Ω	130KΩ	.1Ω

† MEASURED FROM PIN 7 OF V33.

‡ TAKEN IN "FM" POSITION.
Δ TAKEN IN "AM" POSITION.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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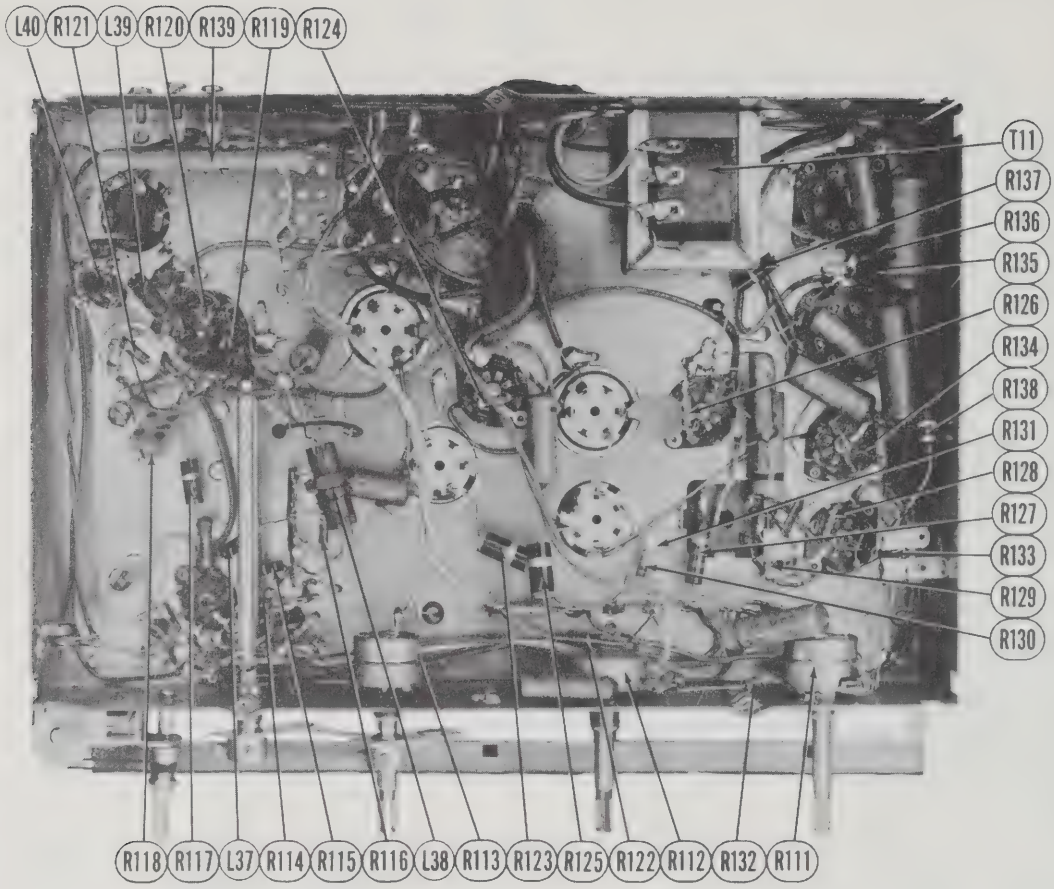
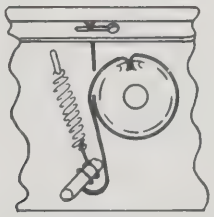
MOTOROLA MODELS 19F1, 19K1
(Ch. TS-67 & Radio Ch. HS-230)

RADIO CHASSIS HS-230

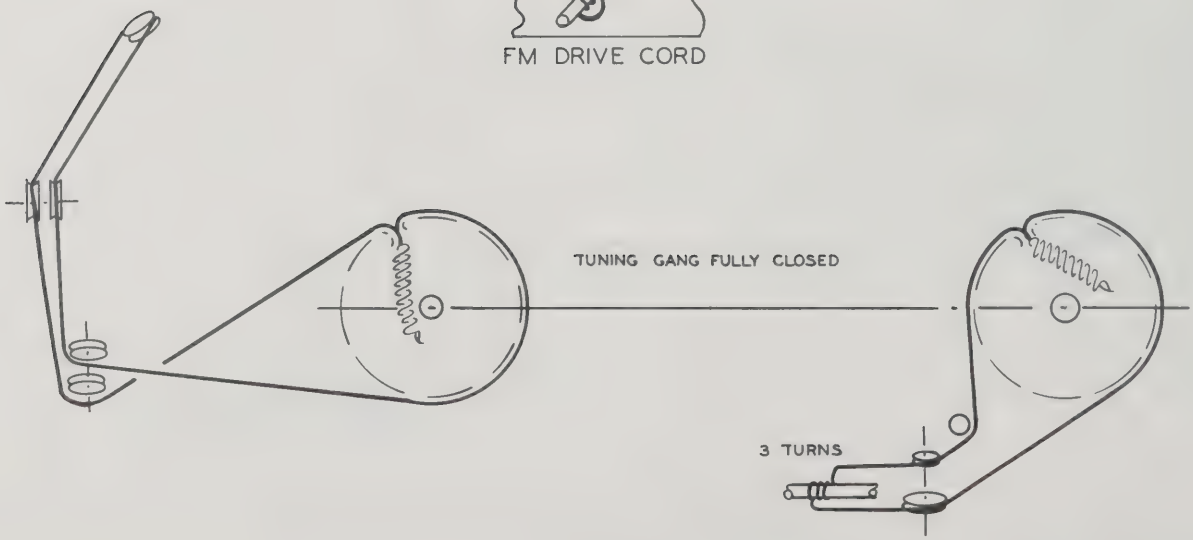
MOTOROLA MODELS 19F1, 19K1
(Ch. TS-67 & Radio Ch. HS-230)



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



FM DRIVE CORD



RADIO DIAL CORD STRINGING

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
V1	RF Amp.	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6AG5	6AG5	7BD	
V4	2nd Video IF	6AG5	6AG5	7BD	
V5	3rd Video IF	6AG5	6AG5	7BD	
V6	Video Det. -Sync. Clipper	6AL5	6AL5	6BT	
V7	Video Amp.	6BA6	6BA6	7BK	
V8	Video Output	6V6GT	6V6GT	7AC	
V9	Cath. Follower-DC Rest.	6AS5	6AS5	7CV	
V10	AGC Rect.	12AX7	12AX7	9A	
V11	Sound IF Amp.	6AU6	6AU6	7BK	
V12	Ratio Det.	6AL5	6AL5	6BT	
V13	AF Amp.	6SL7GT	6SL7GT	8BD	
V14	Audio Output	6V6GT	6V6GT	7AC	
V15	Sync. Amp. -1st Sync. Sep.	12AU7	12AU7	9A	
V16	Vert. Osc.	6SN7GT	6SN7GT	8BD	
V17	Vert. Output	25L6GT	25L6GT	7AC	
V18	Hor. AFC-Hor. Osc.	6SL7GT	6SL7GT	8BD	
V19	Hor. Output	6CD6G	6CD6G	5BT	
V20	Hor. Damper	6W4GT	6W4GT	4CG	
V21	HV Rect.	1B3GT	1B3GT	3C	
V22	LV Rect.	5U4G	5U4G	5T	
V23	LV Rect.	5U4G	5U4G	5T	
V24	Picture Tube	19AP4	19AP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C1A	40	400	23A790829	AFH882J		UPT44145		TVL-3785	▲ Filter
B	40	400							■ Filter
C	10	400							▲ Vert. Osc. Dec.
C2A	40	400	23A790829	AFH882J		UPT44145		TVL-3785	▲ Filter
B	40	400							■ Filter
C	10	400							▲ Filter
C3A	20	350	23A792690	AF4H8G2D5B		UPT316			▲ Filter
B	40	300							■ Filter
C	10	150							▲ Decoupling
D	250	50							Vert. Output Cath.
C4	1Ω Ⓐ 60 ∿	3VNP	23A90027	E4A117				TVL-1015	Vert. Cent. Cont. Byp.
C5	10	50	23A90205						Stabilizing Cap.
C6	10	50	23A90205						1st AF Amp. Cath.
C7	50	25	23A790904	PRS25/50		BR502A		TVA-1206	Output Cath.
C8	10	50	23A90205	PRS50/10		BR105		TVA-1304	AGC Filter
C9	50	25	8R9857	PRS25/50		BR502A		TVA-1206	Hor. Cent. Cont. Byp. *
C10	7.5		21K790454	SI8.2NPO	TCZ-6.8		NPOK-8.2	19C19	Ant. Coupling
C11	7.5		21K790454	SI8.2NPO	TCZ-6.8		NPOK-8.2	19C19	Ant. Coupling
C12	100		21K470736	SI100N750	TCN-100		N750L-100	29C16	Fixed Padder
C13	10		21K790455	SI10	D6-100		GP1K-10	19C19	Fixed Padder
C14	3.3	500	21K790416	SI3.3NPO	TCZ-3.3		NPOK-3.3		Fixed Trimmer
C15	3.3	500	21K790416	SI3.3NPO	TCZ-3.3		NPOK-3.3		Fixed Trimmer
C16	150		21K791589	SI150	D6-151		GP2K-150	19C12	UHF Isolation
C17	1000		21K478410	SI1000	D6-102		GP2L-001	19C1	AGC Filter
C18	1000		21K478410	SI1000	D6-102		GP2L-001	19C1	RF Screen
C19	1000		21K478410	SI1000	D6-102		GP2L-001	19C1	RF Bypass
C20	100		21K470736	SI100	D6-101		GP1K-100	19C11	RF Coupling
C21	2	500	21K471216						Fixed Trimmer
C22	2	500	21K471216						Fixed Trimmer
C23	1.5	500	21R2751	SI1.5NPO	TCZ-1.5		NPOK-1.5		Fixed Trimmer
C24	25		21A470738	SI25	D6-250		GP1K-25	19C27	RF Coupling
C25	1.5	500	21R2751	SI1.5NPO	TCZ-1.5		NPOK-1.5		Osc. Coupling
C27	25		21A470738	SI25	D6-250		GP1K-25	19C27	Osc. Grid Cap.
C27	1.5		21A789121						Fixed Trimmer
C28	25		21A470738	SI25	D6-250		GP1K-25	19C27	Osc. Feedback
C29	1000		21K478410	SI1000	D6-101		GP2L-001	19C1	RF Bypass
C30	5		21K86819				N150K-5		Fixed Trimmer
C31	1000		21K478410	SI1000	D6-102		GP2L-001	19C1	Conv. Fil.
C32	47		21K77373	SI47	D6-470		GP1K-47	19C25	Fixed Trimmer
C33	30		21R31493				N150K-30		Fixed Trimmer
C34	62		21R791726		TCN-62		N750L-62		Fixed Trimmer
C35	100		21A38224	SI100	D6-101		GP1K-100	19C11	IF Coupling
C36	2000		21K790963	SI2000	D6-202	1W5D2	GP2M-002	29C2	AGC Filter
C37	2000		21K790963	SI2000	D6-202	1W5D2	GP2M-002	29C2	RF Bypass
C38	2000		21K790963	SI2000	D6-202	1W5D2	GP2M-002	29C2	1st V. IF Screen
C39	2000		21K790963	SI2000	D6-202	1W5D2	GP2M-002	29C2	1st V. IF Fil.
C40	5000		21A470789	BPD-005	DD-502	1D5D5	811-005	29C1	1st V. IF Dec.
C41	100		21A38224	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C42	2000		21K790963	SI2000	D6-202	1W5D2	GP2M-002	29C2	AGC Filter
C43	2000		21K790963	SI2000	D6-202	1W5D2	GP2M-002	29C2	2nd V. IF Screen
C44	2000		21K790963	SI2000	D6-202	1W5D2	GP2M-002	29C2	2nd V. IF Cath.
C45	2000		21K790963	SI2000	D6-202	1W5D2	GP2M-002	29C2	2nd V. IF Fil.
C46	5000		21A470789	BPD-005	DD-502	1D5D5	811-005	29C1	2nd V. IF Dec.
C47	100		21A38224	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C48	2000		21K790963	SI2000	D6-202	1W5D2	GP2M-002	29C2	3rd V. IF Screen
C49	2000		21K790963	SI2000	D6-202	1W5D2	GP2M-002	29C2	3rd V. IF Cath.
C50	2000		21K790963	SI2000	D6-202	1W5D2	GP2M-002	29C2	3rd V. IF Fil.
C51	5000		21A470789	BPD-005	DD-502	1D5D5	811-005	29C1	3rd V. IF Dec.
C52	1000		21K478410	SI1000	D6-102	1W5D1	GP2L-102	19C1	IF Coupling
C53	5		21K86819	SI5	TCZ-4.7	5W5V5	GP1K-5	MS-55	V. Diode Filter
C54	.1	200	8R9854	P288-1	DF-104	PTE4P1		2TM-1	Video Coupling
C55	.05	600	8R9873	P688-05	DF-503	PTE6S5		6TM-15	Video Coupling
C56	500	500	21R6551	1468-0005	D6-501	5W5T5	GP2K-500	1FM-35	2nd V. Amp. Cath.
C57	47		21K77373	SI47	D6-470	5W5Q5	GP1K-47	19C25	Fixed Trimmer
C58	.02	600	8R9811	P688-02	DF-203	PTE6S2		6TM-12	Video Coupling
C59	.1	400	8R9862	P488-1	DF-104	PTE4P1		4TM-1	Video Coupling

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No	RATING CAP.	RATING VOLT	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C60	47		21K71273	SI47	D6-470	5W5Q5	GP1K-47	19C25	Video Coupling
C61	.1	200	6R9854	P288-1	DF-104	PTE4P1		2TM-1	Video Coupling
C62	47		21K77373	SI47	D6-470	5W5Q5	GP1K-47	19C25	Voltage Divider
C63	1	200	6R9854	P288-1	DF-104	PTE4P1		2TM-1	Sync. Coupling
C64	.005	600	6R9869	P688-005	D6-502	PTE6D5	811-005	6TM-25	Sync. Coupling
C65	100		21A38334	SI100	D6-101	5W5T1	GP1K-100	19C11	Sync. Coupling
C66	.02	200	6R9851	P488-02	DF-203	PTE4S2		2TM-12	AGC Filter
C67	.02	200	6R9851	P488-02	DF-203	PTE4S2		2TM-12	AGC Filter
C68	5		21K86819	SI5	TCZ-4.7	5W5V5	GP1K-5	MS-55	S. IF Coupling
C69	47		21K77373	SI47	D6-470	5W5Q5	GP1K-47	19C25	S. IF Coupling
C70	50		21K77373	SI50	D6-500	5W5Q5	GP1K-50	19C28	Fixed Trimmer
C71	5000		21A470789	BPD-005	DD-502	1D5D5	811-005	29C1	S. IF Screen
C72	5000		21A470789	BPD-005	DD-502	1D5D5	811-005	29C1	S. IF Plate Dec.
C73	500		21K6551	SI500	D6-501	5W5T5	GP2K-500	19C32	Diode Load Cap. †
C74	500		21K6551	SI500	D6-501	5W5T5	GP2K-500	19C32	Diode Load Cap. †
C75	500		21K6551	SI500	D6-501	5W5T5	GP2K-500	19C32	RF Bypass
C76	.002	600	6R9867	P688-002	D6-202	PTE6D2	GP2M-002	6TM-22	De-empahsis
C77	.05	200	6R9853	P288-05	DF-503	PTE4S5		2TM-15	Audio Coupling
C78	.03	200	6R9867	P488-03	DF-203	PTE4S2		2TM-15	Audio Coupling
C79	250		21B482295	SI250	D6-251	5W5T25	GP2K-250	1FM-325	1st AF Amp. Plate
C80	100		21A38334	SI100	D6-101	5W5T1	GP1K-100	19C11	AF Feedback
C81	.0047	600	6R9869	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-472	Audio Coupling
C82	250		21B482295	SI250	D6-251	5W5T25	GP2K-250	1FM-325	2nd AF Amp. Plate
C83	.1	200	6R9854	P288-1	DF-104	PTE6P1		2TM-1	Squelch Filter
C84	200	500	21R6529	1468-0002	D6-201	5W5T2	GP2K-200	1FM-32	Hor. Sync. Coupling
C85	.0047	600	6R9869	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-472	Audio Coupling
C86	.0047	600	6R9869	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-472	Output Plate
C87	.033	400	6R9872	P488-033		PTE6S3		6TM-13	Sync. Coupling
C88	.0047	600	6R9869	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-472	Vert. Sync. Coupling
C89	.0047	600	6R9869	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-472	Integrator Net.
C90	.03	600	6R9872	P688-03		PTE6S3		6TM-13	Integrator Net.
C91	.0047	600	6R9868	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-472	Fixed Trimmer
C92	.05	400	6R9861	P488-05	DF-503	PTE4S5		4TM-15	Vert. Discharge
C93	.1	400	6R9863	P488-1	DF-104	PTE4P1		4TM-1	Vert. Discharge
C94	.15	400	6R9863	P488-15		PTE4P4		4TM-154	Vert. Sweep Coup.
C95	.01	600	6R9870	P688-01	D6-103	PTE6S1	811-01	6TM-11	Vert. Sweep Coup.
C96	.003	600	6R9867	P688-002	D6-202	PTE6D2	GP2M-002	6TM-22	Hor. Sync. Coupling
C97	1500	500	21R6711	1467-0015	D6-152	1W5D15	GP2L-0015	1FM-215	Hor. AFC Grid
C98	1500	500	21R6711	1467-0015	D6-152	1W5D15	GP2L-0015	1FM-215	Hor. AFC Cath.
C99	1000	500	21R6663	1468-001	D6-102	1W5D1	GP2L-001	1FM-21	Hor. AFC Coupling
C100	500	500	21R6551	1468-0005	D6-501	5W5T5	GP2K-500	1FM-35	Hor. Osc. Grid
C101	.05	600	6R9873	P688-05	DF-503	PTE6S5		6TM-15	Hor. Osc. Dec.
C102	330	4000	21K2754	1468-00035	D6-331	5W5T3	GP2K-330	1FM-335	Hor. Discharge
C103	400	500	21R6664	1468-0004	D6-401	5W5T4	GP2K-390	1FM-34	Hor. Discharge
C104	1000	500	21R6663	1468-001	D6-102	1W5D1	GP2L-001	1FM-21	Hor. Sweep Coup.
C105	.05	600	6R9873	P688-05	DF-503	PTE6S5		6TM-15	Hor. Output Screen
C106	.03	600	6R9872	P688-03		PTE6S3		6TM-13	Damper Filter
C107	.04	600	6K400028	P688-04		PTE6S4		6TM-14	Damper Filter
C108	.01	600	6R9870	P688-01	D6-103	PTE6S1	811-01	6TM-11	Fuse Bypass
C109	.5	200	6R9857	P588-5		GT2P5		2TM-5	Hor. Sweep Coup.
C110	500	20K	21A790833	HV20C	TV3-502				HV Filter
C111	500	20K	21A790833	HV20C	TV3-502				HV Filter

* Some models use .5MFD in this application. Mfgr's Part No. 8R9857.
† When either items C73 or C74 are replaced, replace with capacitors of equal value.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	5000Ω	2	18B790843				Contrast control-Wire Wound-front
B	1 Meg.	½					Volume control and switch-rear
R2A	250KΩ	½		Concentrikit			Vert. hold control-front
B	10KΩ	½	18A790838	B11-130 *	RTV-79		Horiz. hold control-rear
C	Shaft End			B11-116 *			Attach per instr. in "Concentrikit",
				E-190 *			
R3A	3000Ω	2	18A792688		RTV-172		Vert. linearity control-Wire Wound-front
B	1 Meg.	½					Vert. size control-rear
R4A	500Ω	4	18A792687		RTV-171		Horiz. centering -Wire Wound-front
B	50Ω	2					Vert. centering-Wire Wound-rear
R5A	1500Ω	4	18A792689		RTV-173		Focus control-Wire Wound-front
B	50KΩ	½					Brightness control-rear

* Additional parts to be used with "Concentrikit".
Cut off bushing if 1/4" length is necessary.

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R6	470KΩ 20%	½	6R6377		RF Amp. Grid
R7	2 ? Meg.	½	6R488136		AGC Network
R8	33KΩ	½	6R6410		RF Amp. Screen
R9	3900Ω	½	6R5659	BTS-3900	RF Amp. Plate
R10	470KΩ 20%	½	6R6377		Conv. Grid
R11	470KΩ 20%	½	6R6377		Conv. Grid
R12	15KΩ	½	6R6477		Osc. Grid
R13	8200Ω	½	6R2004		Osc. Plate
R14	10KΩ	½	6R6320		Conv. Plate
R15	6800Ω	½	6R6428		1st Video IF Amp. Grid
R16	150Ω	½	6R6373	BTS-150	1st Video IF Amp. Cathode
R17	22KΩ	1	6R6341		Voltage Divider
R18	8200Ω	½	6R2004		1st Video IF Amp. Screen
R19	10KΩ 20%	½	6R6054		AGC Network
R20	6800Ω	½	6R6428		2nd Video IF Amp. Grid
R21	100Ω 20%	½	6R6326	BTS-100	2nd Video IF Amp. Cathode
R22	8200Ω	½	6R2004		2nd Video IF Amp. Screen
R23	10KΩ 20%	½	6R6054		AGC Network
R24	5600Ω	½			3rd Video IF Amp. Grid-See Note 1
R25	100Ω 20%	½	6R6326	BTS-100	3rd Video IF Amp. Cathode
R26	8200Ω	½	6R2004		3rd Video IF Amp. Screen
R27	47KΩ 20%	½	6R6056	BTS-47K	Series Test Point
R28	3900Ω	½	6R5659	BTS-3900	Video Det. Diode Load
R29	470KΩ	½	6R6032	BTS-470K	Video Amp. Grid
R30	3900Ω	½	6R5659	BTS-3900	Video Amp. Plate

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
R31	4700Ω	2	6R5671	BTB-4700	Video Amp. Decoupling
R32	1 Meg. 20%	½	6R6004	BTS-1 Meg.	Video Output Grid
R33	100Ω 20%	½	6R6018		Parasitic Suppressor
R34	150Ω	½	6R6373	BTS-150	Video Output Cathode
R35	150KΩ	½	6R6398	BTS-150K	Isolation
R36	3900Ω	5	17K790901		Video Output Plate-Wire Wound
R37	560KΩ	1	6R5697	BTS-560K	Cathode Follower Amp. Grid
R38	100Ω 20%	½	6R6018		Parasitic Suppressor
R39	5000Ω	5	17K791597	1 3/4A-5000	Contrast Control Shunt-Wire Wound
R40	2200Ω	½	6R6069	BTS-2200	Phase Correction
R41	560KΩ	1	6R5697	BTA-56UK	Voltage Divider
R42	150KΩ	½	6R6398	BTS-150K	Picture Tube Grid
R43	8200Ω	½	6R5644	BTS-8200	Voltage Divider-See Note 2
R44	68KΩ	2	6R2079	BTB-68K	Voltage Divider
R45	47KΩ	½	6R6056	BTS-47K	AGC Network
R46	10KΩ 20%	½	6R6054	BTS-10K	AGC Network
R47	1 Meg. 20%	½	6R6004	BTS-1 Meg.	Series Test Point
R48	100KΩ 20%	½	6R6075	BTS-100K	Voltage Divider
R49	18KΩ	½	6R5591	BTS-18K	AGC Rect. Cathode
R50	470Ω 20%	½	6R3949	BTS-470	AGC Rect. Cathode
R51	1 Meg. 20%	½	6R6004	BTS-1 Meg.	AGC Rect. Grid
R52	10KΩ	½	6R6320	BTS-10K	Voltage Divider
R53	82KΩ	1	6R5644	BTA-82K	Isolation
R54	100KΩ 20%	½	6R6075		Sound IF Amp. Grid
R55	15KΩ 20%	½	6R2119		Voltage Divider
R56	100KΩ 20%	½	6R6075		Sound IF Amp. Screen
R57	2700Ω	½	6R5577	BTS-2700	Sound IF Amp. Plate Decoupling
R58	1500Ω	½	6R6038	BTS-1500	Balancing
R59	1000Ω	½	6R6229	BTS-1000	Balancing
R60	6800Ω	½	6R6428	BTS-6800	Ratio Det. Diode Load
R61	6800Ω	½	6R6428	BTS-6800	Ratio Det. Diode Load
R62	47Ω	½	6R2108		Parasitic Suppressor
R63	39KΩ	½	6R6487	BTS-39K	De-emphasis
R64	2.2 Meg. 20%	½	6R3927	BTS-2.2 Meg.	Tone Compensation
R65	100KΩ 20%	½	6R6075	BTS-47K	AF Amp. Cathode
R66	1000Ω 20%	½	6R6229	BTS-1000	AF Amp. Cathode
R67	82KΩ	1	6R5644	BTA-82K	AF Amp. Plate
R68	4.7 Meg. 20%	½	6R2122	BTS-4.7 Meg.	AF Amp. Grid
R69	15KΩ	½	6R6477	BTS-15K	AF Amp. Cathode
R70	100KΩ	½	6R6031	BTS-100K	Voltage Divider
R71	82KΩ	1	6R5644	BTA-82K	AF Amp. Plate
R72	1.5 Meg.	½	6R6460	BTS-1.5 Meg.	Squelch Rect. Load
R73	100KΩ 20%	½	6R6075	BTS-100K	Squelch Rect. Load
R74	470KΩ 20%	½	6R6032	BTS-470K	Audio Output Grid
R75	33Ω	½	6R6254	BTA-330	Audio Output Cathode
R76	270KΩ	½	6R6414	BTS-270K	Sync. Amp. Cathode
R77	470KΩ 20%	½	6R6032	BTS-470K	Sync. Amp. Plate
R78	18KΩ	½	6R5591	BTS-18K	Sync. Sep. Grid
R79	1000Ω	½	6R6229	BTS-1000	Sync. Sep. Cathode
R80	6800Ω	½	6R5699	BTB-6800	Sync. Sep. Plate
R81	6800Ω	½	6R6428	BTS-6800	Integrator
R82	4700Ω 20%	½	6R6039	BTS-4700	Integrator
R83	220KΩ 20%	½	6R6407	BTS-220K	Vert. Osc. Grid
R84	4700Ω	½	6R6080	BTS-4700	Vert. Peaking
R85	560KΩ	1	6R5697	BTA-560K	Vert. Osc. Plate
R86	47KΩ	½	6R6056	BTS-47K	Vert. Osc. Plate Decoupling
R87	3.3 Meg.	½	6R6497	BTS-3.3 Meg.	Vert. Output Grid
R88	470Ω 20%	1	6R5593	BTA-470	Vert. Output Cathode
R89	10KΩ 20%	½	6R6054	BTS-10K	Sync. Clipper Cathode
R90	1500Ω	½	6R6038	BTS-1500	Sync. Clipper Plate
R91	1000Ω 20%	½		BTS-1000	Horiz. AFC Cathode-See Note 3
R92	10KΩ	½	6R6320	BTS-10K	Horiz. AFC Cathode
R93	560KΩ	1		BTA-560K	Horiz. AFC Plate-See Note 4
R94	39KΩ	½		BTS-39K	Horiz. Osc. Grid-See Note 5
R95	270KΩ	1	6R6491	BTA-270K	Horiz. Osc. Plate
R96	10KΩ	½	6R6054	BTS-10K	Decoupling
R97	27KΩ	½	6R6434	BTS-27K	Horiz. Peaking
R98	1 Meg. 20%	½	6R6004	BTS-1 Meg.	Horiz. Output Grid
R99	100Ω 20%	½	6R6326		Parasitic Suppressor
R100	5000Ω	5	17K791597	1 3/4A-5000	Horiz. Output Screen-Wire Wound
R101	470KΩ 20%	½	6R6032		HV Filter
R102	47Ω	1	6R5583	BW-½-47	Centering Network
R103	2000Ω	25	17K890906	2 1/2DA-2000	Series Focus Control-Wire Wound
R104	500Ω	5	17K792704	1 3/4A-500	Focus Coil Shunt-Wire Wound
R105	3000Ω	10	17K790900	1 3/4A-3000	Focus Coil Shunt-Wire Wound
R106	47KΩ	½	6R6048	BTS-47K	Feedback
R107	15KΩ	1	6R6431	BTA-15K	Decoupling
R108	1000Ω	2	6R476004	BTB-1000	Filter
R109	3000Ω	10	17K790900	1 3/4A-3000	Filter-Wire Wound
R110	1000Ω	2	6R476004	BTB-1000	Decoupling

Note 1. Some models use a 8200Ω resistor in this application.
Note 2. Some models use a 12KΩ resistor in this application.
Note 3. Some models use a 3300Ω resistor in this application.
Note 4. Some models use a 47KΩ resistor in this application.
Note 5. Some models use a 43KΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 2.7A	600VCT .410ADC	5VAC @ 6A	6.3VAC @ 1.2A SEC. 4 6.3VAC @ 1A	25K792564			

TRANSFORMER (FILAMENT)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T2	6.3VAC @ 1.3A Tap @ 2.5VAC @ .3A				25B792709			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE	REPLACEMENT DATA MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T3	53Ω	25B790914	A-8111	A-3000 ⑤	T80-1	Vert. Block Osc. Trans.
T4	470Ω Tap @ 32Ω	24C792691		HVO-6		Hor. Output Trans.
	.6Ω SEC. 2					
	0Ω					
T5	600Ω	25K792710		A-3038	T80-2 ⑤	Vert. Output Trans.
T6A	13Ω	24C792699	DY-7	MD-70F		Hor. Deflection Coil
B	82Ω	24K792714 ④				Vert. Deflection Coil
T7	1400Ω	24B792775				Focus Coil
T8	20Ω CT	25B790916				Hor. Osc. Coil

④ Alternate deflection yoke.
⑤ Drill one new mounting hole.
⑥ Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T9	6000Ω	7.8Ω	560Ω	.8Ω	25B790698	A-3824	A-2904 ①	RO-6 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS	REPLACEMENT DATA MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD RES. / V. C. IMP.				
SP1	PM 4.4Ω	50C791631		12A4A	② Alternate for SP2A
SP2A	PM 3.4Ω	50C790701		5A07	③ Alternate for SP3A
B	PM	50C791430 ②		12A31	
SP3A	PM 3.5Ω	50C791173			
B	PM 3.5Ω	50C790699 ③			
	CONE DIA. / V. C. DIA.				
SP4	11 3/8" 1"				
SP5A	4 1/2" 9/16"				
B					
SP6A	9 3/4" 1"				
B					

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D.C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.410ADC	40Ω	1.8 Henries	25B790952				

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MOTOROLA PART No.	MEISSNER PART No.	NOTES
L2	TV Ant. Trans. Assembly	.1Ω	.1Ω	1X790492		Includes 2 trans., C10, C11, C12, C13
L3	UHF Ant. Coil	.1Ω		24K485432		
L4	RF Choke	0Ω		24A791082		
L5	Fil. Choke	0Ω		24A791081		
L6	Adj. Channel Video Trap	.1Ω		24B791592		
L7	1st Video IF	.2Ω		24K700104		
L8	1st Video IF Coupling	.2Ω		24K700104		
L9	Sound Trap	.1Ω		24B791592		
L10	Fil. Choke	0Ω		24A791081		
L11	2nd Video IF	.1Ω		24B790849		
L12	Fil. Choke	0Ω		24A791081		
L13	RF Choke	0Ω		24A791081		
L14	3rd Video IF	.1Ω		24B790849		
L15	Fil. Choke	0Ω		24A791081		
L16	RF Choke	0Ω		24A791081		
L17	4th Video IF	.4Ω	.4Ω	24B790852		
L18	RF Choke	0Ω		24A791081		
L19	Peaking	5Ω		24K790854		Blue dot
L20	Peaking	6.5Ω		24K790856		Yellow dot
L21	Peaking	5Ω		24K790854		Blue dot
L22	Peaking	6.5Ω		24K790856		Yellow dot
L23	4.5 MC Trap	1.4Ω		24B790851		
L24	Peaking	5Ω		24K790855		Wound on 22KΩ resistor, red dot
L25	Peaking	6.5Ω		24K790856		Yellow dot
L26	Peaking	1.9Ω		24B790853		Orange dot
L27	Sound IF	1.4Ω		24B790851		
L28	Ratio Det. Trans.	3Ω	.3Ω	24B790125		
L29	Horiz. Freq. Lock-In Coil	200Ω		24B790890		
L30	Horiz. Lin.	20Ω		24K792820		Less core and clip
L31	Horiz. Size	50Ω		24K792722		Less core and clip

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA MOTOROLA PART No.		NOTES
M1	Bayonet	6-8	.15	Brown	65X11854		Type #47
M2	Bayonet	6-8	.15	Brown	65X11854		Type #47

TV PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M3	RF Tuner	1X790700	
M4	Fuse	65K20987	.25A 250V Type 3AG
M5	Ion Trap	24K791477	
	Built-In TV Antenna Assembly	1X791759	Complete with double loop, 4 capacitors, coil and connecting cables.
	Safety Glass	61C792086	
	Knob	36B790997	Channel selector
	Knob	36B790999	TV volume
	Knob	36K791630	With dot indicator (Radio)
	Knob	36B790569	Without dot indicator (Radio)
	Escutcheon	1X790842	Channel, complete with locking lever and spring
	Escutcheon	1X790014	Volume, complete with locking lever and spring
	Escutcheon	13C791478	Radio dial

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		MOTOROLA PART No.	STANDARD REPLACEMENT		
V25	RF Amp.	6AU6	6AU6	7BK	
V26	Converter	6BA7	6BA7	8CT	
V27	1st IF Amp.	6BA6	6BA6	7BK	
V28	2nd FM IF Amp.	6AU6	6AU6	7BK	
V29	FM Ratio Det.	6AL5	6AL5	6BT	
V30	AM DET. -AVC- AF Amp.	6AV6	6AV6	7BT	
V31	Power Output	6V6GT	6V6GT	7AC	
V32	Power Output	6V6GT	6V6GT	7AC	
V33	Rect.	7Z4	7Z4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C112A	40	300	23B690975	AFH888G4D		UPT44430		TVL-4739	▲ Filter
B	40	250				C4			■ Filter
C	40	250							▲ Filter
D	40	25							Output Cath.
C113	3	50	23K690543	PRS150/4		BBR4-50		TVA-1303	Stabilizing Cap.
C114	5		21K70720	SI5	TCZ-4.7	5W5V5	GP1K-5	MS-55	Ant. Coupling
C115	220		21K77375	SI220	D6-221	5W5T25	GP2K-220	19C13	Ant. Coupling
C116	.05	200	8R9821	P288-05	DF-503	PTE4S5		2TM-15	AVC Filter
C117	10000		21K482726	BPD-01	DD-103	PTE4S1	811-01	36C1	RF Screen
C118	100		21B77286	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Cath.
C119	100		21B77286	SI100	D6-101	5W5T1	GP1K-100	19C11	Fixed Trimmer
C120	100		21B77286	SI100	D6-101	5W5T1	GP1K-100	19C11	RF Coupling
C121	100	500	21R6554	1468-0001	D6-101	5W5T1	GP1K-100	1FM-31	RF Coupling
C122	24		21K28816	SI25	D6-250	5W5Q25	GP1K-25	19C27	Osc. Grid Cap.
C123	85		21K691203				N750L-85		Fixed Trimmer
C124	100		21B77286	SI100	D6-101	5W5T1	GP1K-100	19C11	Conv. Dec.
C125	.01	400	8R9809	P488-01	D6-103	PTE4S1	811-01	4TM-11	Conv. Dec.
C126	1000		21K478410	SI1000	D6-102	1W5D1	GP2L-001	19C11	Conv. Fil.
C127	.005	600	8R9813	P688-005	D6-502	PTE6D5	811-005	6TM-25	1st IF Dec.
C128	.01	400	8R9809	P488-01	D6-103	PTE4S1	811-01	4TM-11	1st IF Fil.
C129A	50		§	SI50	D6-500	.5W5Q5	GP1K-50	19C28	Diode RF Filter
B	50			SI50	D6-500	5W5Q5	GP1K-50	19C28	Diode RF Filter
C130	1000		21K478410	SI1000	D6-102	1W5D1	GP2L-001	19C1	RF Bypass
C131	.002	400	8R9824	P688-002	D6-202	PTE6D2	GP2M-002	6TM-22	2nd IF Dec.
C132	10000		21K482726	BPD-01	DD-103	PTE4S1	811-01	36C1	2nd IF Cath.
C133A	250		21B484337	SI250	D6-251	5W5T25	GP2K-250	1FM-325	Diode Load Cap. †
B	250			SI250	D6-251	5W5T25	GP2K-250	1FM-325	Didde Load Cap. †
C134	1000		21K478410	SI1000	D6-102	1W5D1	GP2L-001	19C1	De-emphasis
C135	.05	200	8R9821	P288-05	DF-503	PTE4S5		2TM-15	Audio Coupling
C136	.005	600	8R9813	P688-005	D6-502	PTE6D5	811-005	6TM-25	Tone Compensation
C137	.01	400	8R9809	P488-01	D6-103	PTE4S1	811-01	4TM-11	Tone Compensation
C138	5000		21K691125	BPD-005	DD-502	1D5D5	811-005	29C1	Audio Coupling
C139	220		21K77375	SI220	D6-221	5W5T25	GP2K-220	19C13	AF Amp. Plate
C140	.05	400	8K470606	P488-05	DF-503	PTE4S5		4TM-15	Audio Coupling
C141	.05	400	8K470606	P488-05	DF-503	PTE4S5		4TM-15	Audio Coupling
C142	.002	400	8R9824	P688-002	D6-202	PTE6D2	GP2M-002	6TM-22	Output Plate
C143	.002	400	8R9824	P688-002	D6-202	PTE6D2	GP2M-002	6TM-22	Output Plate

† When either items C133A or C133B are replaced, replace both with capacitors of equal value.
§ Items C129A, C129B, and R131 are combined into one unit. Mfgr's Part No. 21K690980.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R111A	1 Meg.	½	18K691192	Q13-137X	AK-98	ANT-73	Volume control-tapped at 250KΩ
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R111A per instructions
C	Switch		Not Req.	76-1	SWB	K-155	Attach to R111A per instructions
R112A	1 Meg.	½	18K77399	Q14-137		AN-68	Tone control
B	Shaft		Not Req.	Not Req.		AK-4	Attach to R112A per instructions

RADIO **PARTS LIST AND DESCRIPTIONS (Continued)**

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MOTOROLA PART No.	IRC PART No.	
R113	1 Meg.	1/2	6R6004	BTS-1 Meg.	RF Amp. Grid
R114	120Ω	1/2	6R5551	BTS-120	RF Amp. Cathode
R115	47KΩ	1/2	6R6048	BTS-47K	RF Amp. Screen
R116	470Ω	1/2	6R3949	BTS-470	RF Amp. Plate
R117	3.3Ω	1			Parasitic Suppressor-See Note 6
R118	22KΩ	1/2	6R6028	BTS-22K	Conv. Grid
R119	8.2 Meg.	1/2	6R5585	BTS-8.2 Meg.	AVC Network
R120	47KΩ	1/2	6R6048	BTS-47K	Osc. Grid
R121	1500Ω	1/2	6R6038	BTS-1500	Parasitic Suppressor
R122	3.3 Meg.	1/2	6R6497	BTS-3.3 Meg.	AVC Network
R123	8200Ω	2	6R5725	BTB-8200	Conv. Decoupling
R124	68Ω	1/2		BTS-68	FM-AM-IF Amp. Cathode
R125	8200Ω	2	6R5725	BTB-8200	FM-AM-IF Amp. Decoupling
R126	150Ω	1/2		BTS-150	2nd FM-AM-IF Amp. Cathode
R127	15KΩ	1	6R6431	BTA-15K	2nd FM-AM-IF Amp. Decoupling
R128	33KΩ	1/2	6R6410	BTS-33K	Ratio Det. Diode Load
R129	47KΩ	1/2	6R6048	BTS-47K	De-emphasis
R130	1 Meg.	1/2	6R6046	BTS-1 Meg.	Det. Diode Load
R131	47KΩ	1/2	§		Diode Filter
R132	33KΩ	1/2	6R6410	BTS-33K	Tone Compensation
R133	10 Meg.	1/2			AF Amp. Grid
R134	68KΩ	1/2		BTS-68K	AF Amp. Plate
R135	470KΩ	1/2	6R6032	BTS-470K	Output Grid
R136	470KΩ	1/2	6R6032	BTS-470K	Output Grid
R137	220Ω	1	6R6389	BTA-220	Output Cathode
R138	390Ω	1	6R5598	BTA-390	Output Plate
R139A	180Ω	3	17A690973		Filter-Wire Wound
B	180Ω				Filter-Wire Wound

§ Items C129A, C129B and R131 are combined into one unit obtainable under Mfgr's Part No. 21K690980.
Note 6. Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T10	117VAC @ 1.3A	500VCT .093ADC	7VAC Tap @ 6.3VAC @ 4.2A		25B691035			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T11	2400Ω per plate	7.8Ω	170Ω per plate	.4Ω	25B690898				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
L32	Antenna	0Ω		24K690985		FM Built-In
L33	FM Ant. Coil	0Ω		24C690584		Less core
L34	FM RF Coil	0Ω		24C690584		Less core
L35	FM Osc.	0Ω		24K690996		Less core
L36	Loop Ant.	2.8Ω		24C690896		
L37	RF Choke	.2Ω		24A484025		
L38	AM RF Coil	2.8Ω	5Ω	24B690899		
L39	RF Choke	2.5Ω		24K780128		
L40	AM Osc. Coil	14Ω		24B690976	14-1060	
L41	1st AM IF	14Ω	14Ω	24B482863		Less shield
L42	1st FM IF	2Ω	.9Ω	24B690540		Less shield
L43	2nd AM IF	14Ω	14Ω	24B482865		Less shield
L44	2nd FM IF	5Ω	.9Ω	24B690541		Less shield
L45	Ratio Det. Trans.	2Ω	.1Ω	24B690542		

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA					REMARKS
	MOTOROLA PART No.	ASTATIC PART No.		SHURE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M6		AC-AG-J	A-AG(J)	W26B	A66U	

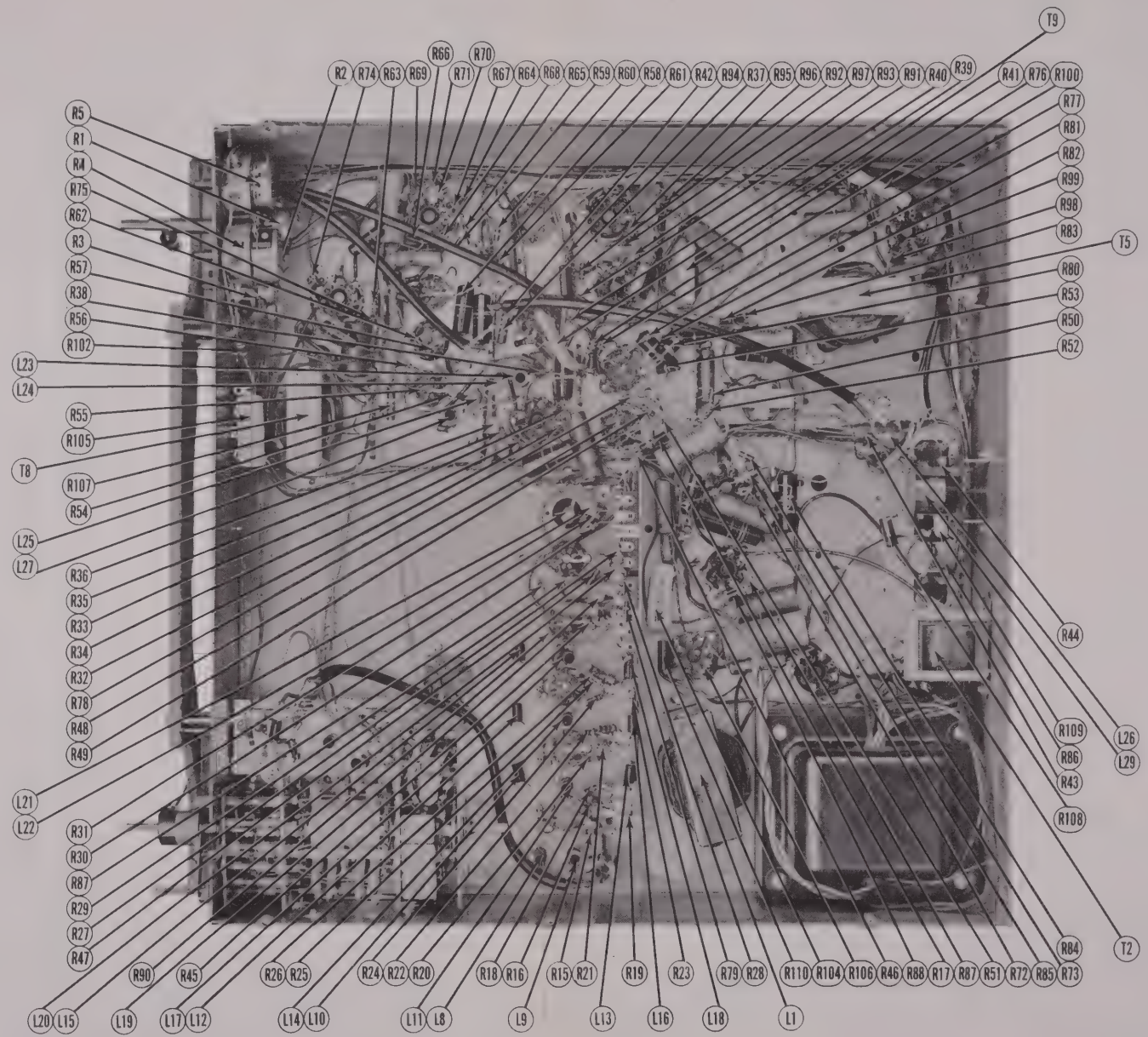
ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

DIAL LIGHTS

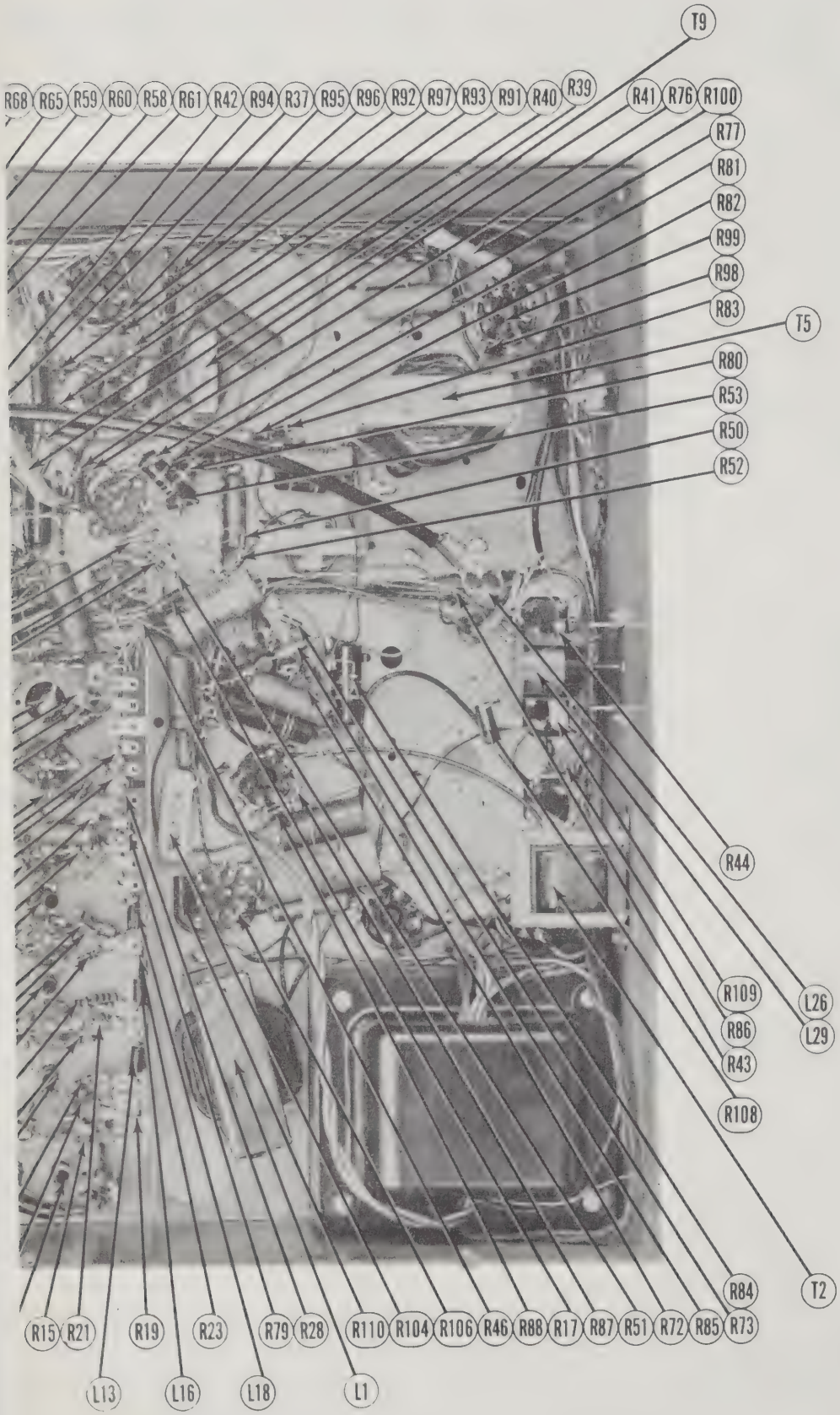
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MOTOROLA PART No.		
M7	Bayonet	6-8	.15	Brown	65X11854		Type #47
M8	Bayonet	6-8	.15	Brown	65X11854		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M9	Switch	40A691922	Phono motor
M10	Switch	40B690977	Function (AM-FM-Phono)
M11	Tuning Cap.	19B690978	(21 - 454 MMF, 26 - 234 MMF, 13 - 186 MMF)



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



FOR AND INDUCTOR IDENTIFICATION

OAK
MODEL 9201

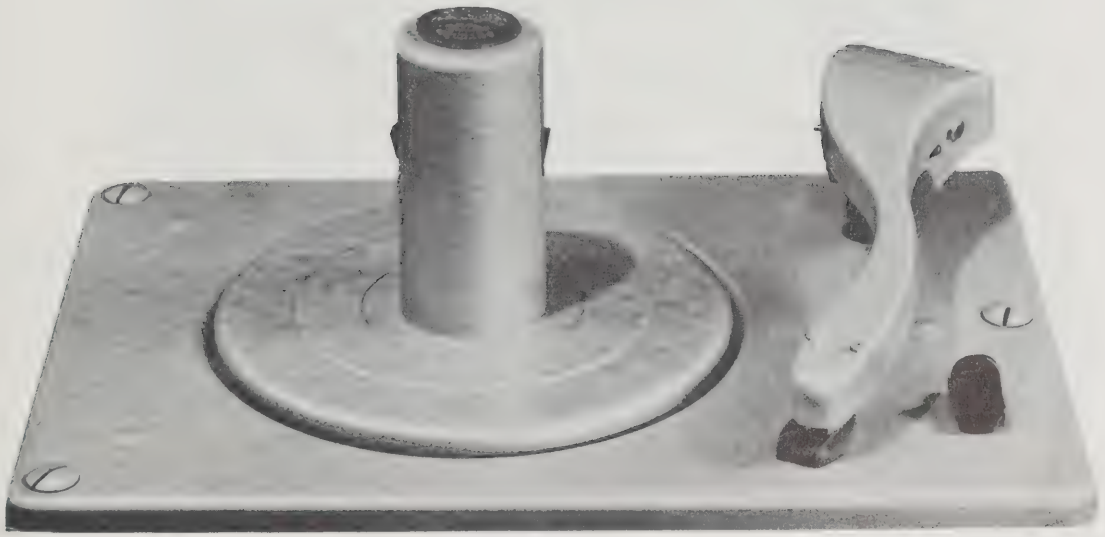


Figure 1

OAK
MODEL 9201

GENERAL INFORMATION

The Oak Model 9201, 45 RPM Changer is designed to play and change automatically the new 6-7/8", fine-groove phonograph records. It will handle up to twelve records, in sequence, at a loading. This changer is of the new "Spindle-Loading," "Rapid-Changing" type. The changer incorporates two safety springs, which are connected to the pivot pin of the tone arm and the tone arm mounting bracket to prevent damage to the tone arm or any of its connected parts, if for some reason the tone arm is held during the change cycle. It is designed to operate from a supply of 110-volts, 60 cycles AC. The last record will be repeated until the changer is turned off.

Manufactured by:

Oak Manufacturing Co.,
1260 Clybourne Avenue
Chicago 10, Illinois

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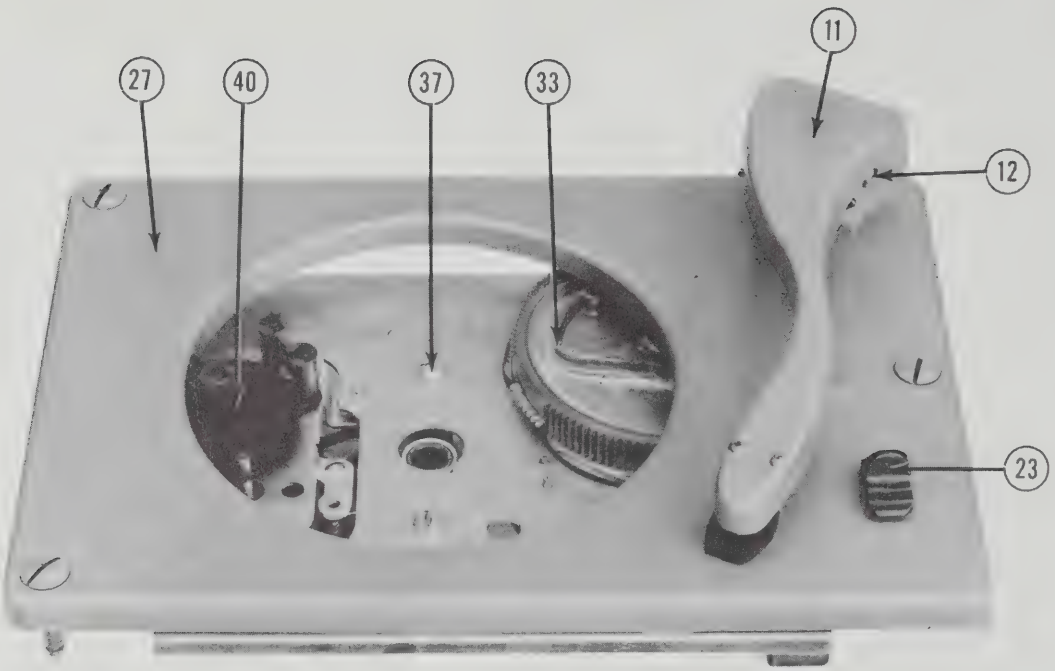


Figure 2

AUTOMATIC OPERATION

To operate this changer, be sure the mechanism is out of cycle and the pickup arm is on the arm rest (26) before loading.

1. Remove the needle guard.

2. Place a stack of the new 6-7/8," fine-groove records on the spindle, allowing them to come to rest on the record supports (7).

3. Push the knob (23) toward the back of the changer base and release. This starts the turntable revolving and the automatic operation. The mechanism will automatically play, in sequence, one side of each record stacked on the support shelves (7). The last record will be repeated until the changer is turned off.

4. To reject a record being played, push the knob (23) toward the back of the tone arm and release.

5. To repeat a record being played, remove all remaining records from the shelf (7). The remaining record will continue to repeat until additional records are replaced on the spindle or the changer is turned off.

6. To stop the changer, allow the mechanism to go through a complete change cycle returning the tone arm to the record. Push the knob (23) forward, then place the tone arm on the arm rest pad (26).

7. To remove the records, lift them straight up the spindle.

CAUTION: Do not try to remove the records on the turntable if the turntable is stopped in cycle with the separator blades (6) exposed.

CHANGE CYCLE

The change cycle is either started by pushing the knob (23) toward the back of the tone arm, which, in turn, moves the reject lever (48) against the segment gear (32), or by the engagement of the tone arm lever (30) and the segment gear (32) as the tone arm moves into the cutoff groove of the record. This engagement of either the reject lever (48) or the tone arm lever (30) with the segment gear (32) causes the segment gear (32) to be pivoted out to engage the teeth of the pinion gear (21) causing the cam gear (33) to turn and thus start the change cycle.

The change cycle operation is very rapid, due to the fact that it only takes one and a half revolutions of the turntable to complete a change cycle. Therefore, as the cam gear (33) revolves, the pin of the muting switch moves off the boss (A) of the gear (33), Figure 5, shorting out the audio. The lift pin (25) rides up the incline surface of the track (B) of the main cam (33), Figure 6, to raise the tone arm from the record.

The turned-down end of the tone arm lever (30) following the groove (C) of the cam (33), Figure 6, swings the tone arm out clear of the records. At the same time this operation is taking place, the pinion gear (21) riding on the cammed edge (D) of the main gear (33), Figure 6, raises, causing the two drive keys of the pinion gear (21) to actuate the separator assemblies (6) and the record supports (7). This action is necessary to cause the record supports (7) to recede, and the separators (6) to move out to select the lower record of the stack and to support the remaining records while the bottom record slides to the turntable.

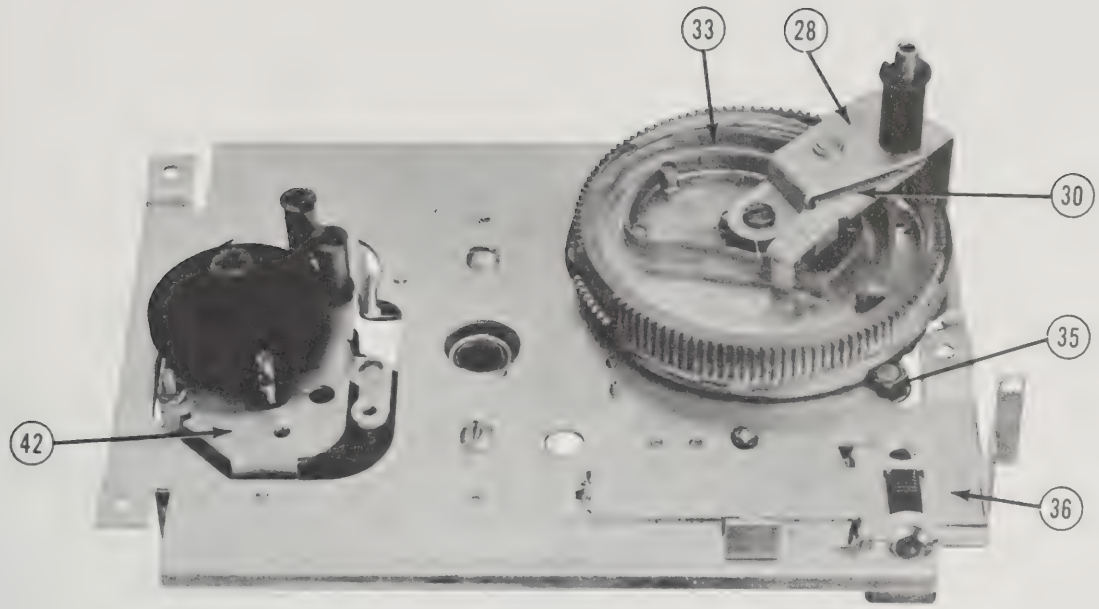


Figure 3

At approximately one-third of a revolution of the turntable, the end of the segment gear (32), extending from the top side of the cam gear (33), comes in contact with the gear mounting bracket (28), resetting the segment gear (32).

The tone arm now moves in for set-down. The pinion gear (21) rides down track (D) of the main gear (33), Figure 6, returning the spindle assembly to its normal position. The end of the tone arm lever is moved into the open portion of the cam track (C), giving free movement of the tone arm across the record. The index lever (35) snaps the main cam (33) into a neutral position. The muting switch pin then comes in contact with the boss (A) on the cam (33), Figure 5, restoring the normal audio circuit. This completes the change cycle.

ADJUSTMENTS

Tone Arm Set-Down -

The set-down point may be adjusted by loosening screw (12) and sliding the bracket (16) forward to move the set-down point away from the spindle, and back to move the tone arm inward. After the adjustment has been made, tighten the screw and run the changer through several change cycles to see if the tone arm is setting down in proper position. (Before making adjustment, see that the safety spring (14) is in pin grooves.)

Tone Arm Height -

Before making any adjustment, check to see if the cartridge is secure in the tone arm. When properly adjusted, the tone arm should clear a stack of twelve records on the turntable. This adjustment is made by loosening the screw on the back of the tone arm, which holds the counterweight in place. Raising the screw in the elongated hole raises the tone arm. Lowering this screw, in turn, lowers the tone arm. Tighten the screw and check the adjustment.

TROUBLES

Continuous Tripping -

Spring (47) loose, allowing levers (36) and (48) to stay in their reject position. Spring (50) loose, which may cause the cam (33) to continue rotating instead of being held in a neutral position by the index lever (35). Spring (51), Figure 5, bent or loose, which prevents segment gear from locking.

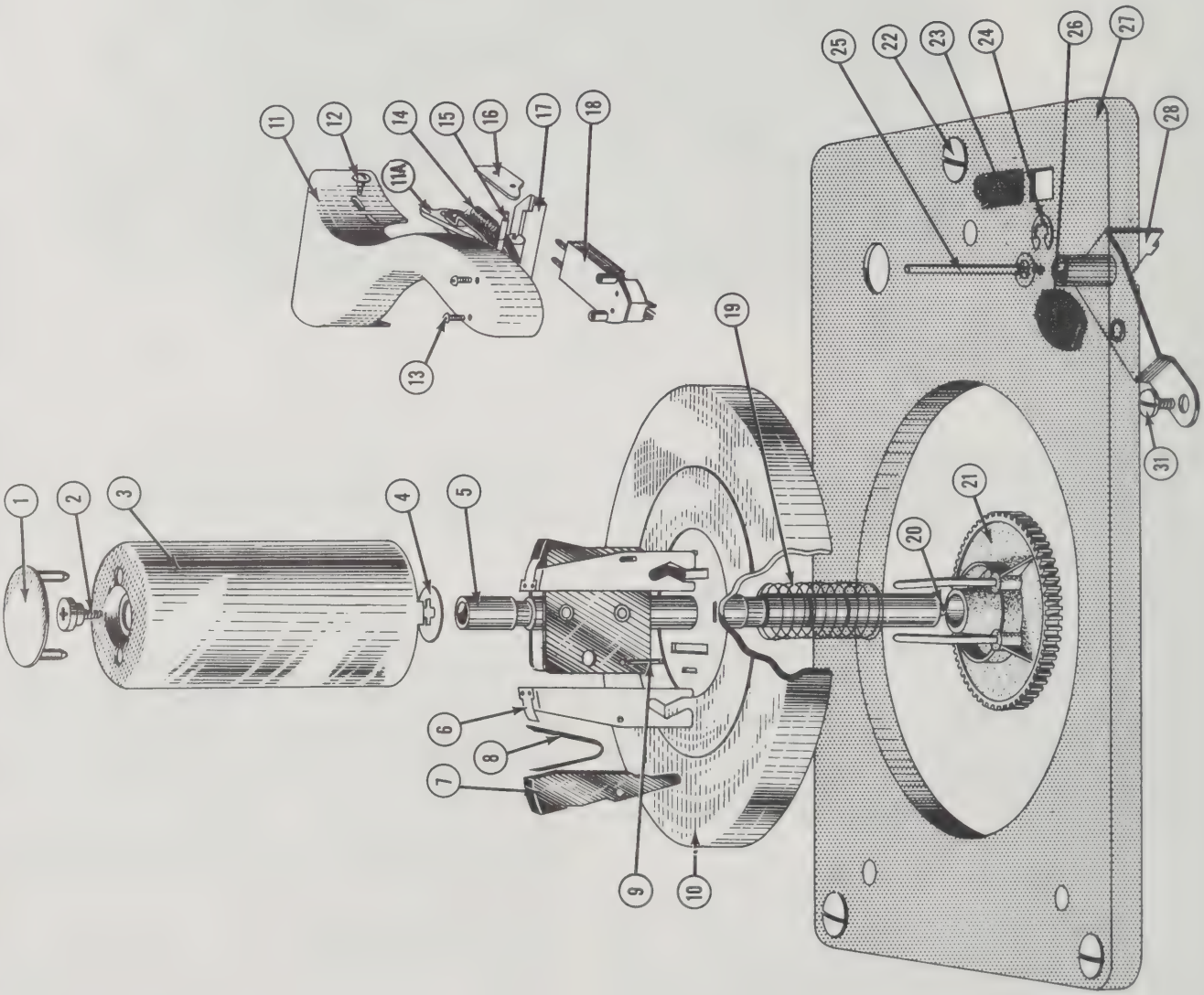
Tab on end of segment gear not bent properly. (Tab to be bent so that it resets segment gear when it passes gear mounting bracket (28).)

Wow (Speed Variation)-

1. Idler wheel (40) binding on tight bearing stud.
2. Grease or oil on idler wheel and turntable rim.
3. Idler wheel spring loose.
4. Defective motor (42).
5. Turntable binding.
6. Tight motor bearings.

No Sound During Playing -

1. Pin on the end of the muting switch broken off, thereby shorting out the audio.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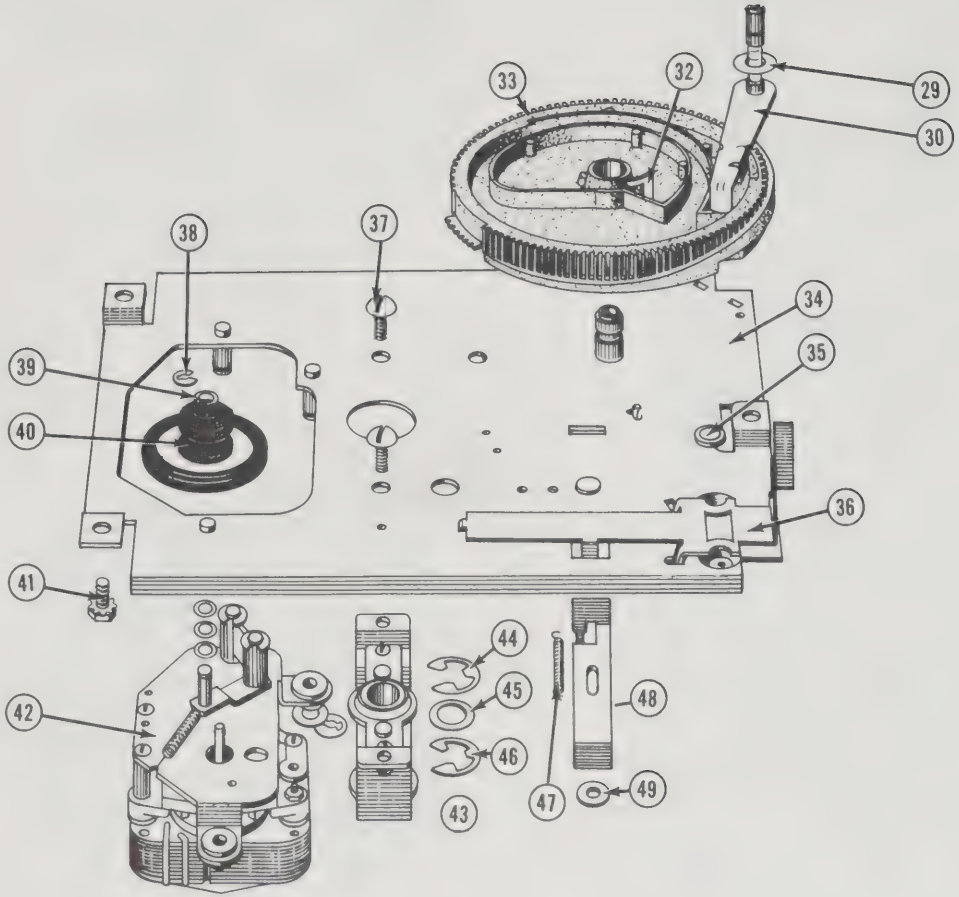

A PHOTOFACT "EXPLODED" VIEW

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2. Defective cartridge (18).

3. Defective amplifier.

4. Defective wiring.

5. Bent muting switch.

Turntable Raises During Change Cycle -

1. "C" washer (46) missing.

2. Thrust washer missing.

Stalling During the Change Cycle -

1. Oil and grease on idler wheel (40), turntable rim, motor shaft, or pulley.

2. Check the space between the separator blades and supports. The space should be between .040 and .048 of an inch. If this spacing is not correct, the blades may strike the edge of the record causing the changer to stop.

3. Binding gears.

Changer Fails to Trip -

1. Pinion gear (21) binding in a raised position. This prevents the pinion gear (21) from engaging the segment gear (32) in starting the change cycle.

2. The tone arm lever (30) bent up, thereby not engaging the segment gear (32) when the tone arm enters the cutoff groove.

3. Sluggish segment gear (remove dirt and grease).

Noise During Playing of Record -

1. Rumble.

(a) From Motor: If a low-pitched rumbling sound comes from the loud speaker while a record is being played, check the motor grommets to be sure the motor is freely suspended on them. The motor lead wires should have slack to allow the motor to float. Motor rumble may also come from an out-of-balance motor rotor. In this case, the motor should be replaced.

(b) Defective ballbearing (20). The turntable will have to be removed to check this bearing. The turntable may be removed by taking away the "C" washer (46).

(c) Spring mounting Free.

2. Defective Motor Idler Wheel -

A rapid thumping sound while the motor is running may indicate a flat spot on the motor idler wheel (40). If this condition does not clear up after ten minutes of running time, remove the turntable and check the rubber tire on the idler. If the surface of tire is uneven, replace with a new idler (40).

3. Turntable Scrapes -

If a scraping sound occurs as the turntable revolves, check:

(a) Turntable warped, causing outer rim to raise and fall.

(b) Motor idler or mounting plate bent.

(c) Missing ball thrust (20).

Changer Trips Before End of Cycle -

1. Spring (51) loose. This may cause, through vibration, the segment gear to engage the pinion gear (21).

2. Tone arm lever (30) hits segment gear (32) before needle leaves recording grooves.

REMOVAL OF PARTS

Tone Arm -

To remove the tone arm, slide the two tone arm clips away from cartridge. Loosen the clamp screw in the tone arm mounting assembly (11A). The tone arm may now be removed by pulling it straight up the shaft (30).

Turntable -

Remove "C" washer (46) and pull up on the spindle.

Main Cam -

1. Remove the tone arm, as described under "Tone Arm."

2. Remove the turntable.

3. Remove the knob (23).

4. Remove the three sub-plate mounting screws (41).

5. The cam may now be removed by loosening the screw (31).

Spindle -

Remove "C" washer (46); then pull up on the spindle and turntable. Remove "C" washer (44) and pull the pinion gear assembly (21) from the spindle shaft. Remove "C" washer next to turntable and slide turntable from shaft. Remove screw cover (1) and remove screw (2). Carefully slip spindle cap (3) from spindle shaft (5).

To Assemble Spindle -

Slide the turntable into place and secure it with the "C" washer. Hold the spindle shaft in a vertical position and place the special washer (4) on the end of the shaft. Push the record support (7) and separator (6) inward, and gently slide the spindle cap (3) into place. Be sure washer (4) is still in place. Place screw (2) in end of shaft and tighten. Push screw cover into place. Slide the spring (19) and pinion gear (21) into place (as shown in exploded view), and fasten with "C" washer (44).

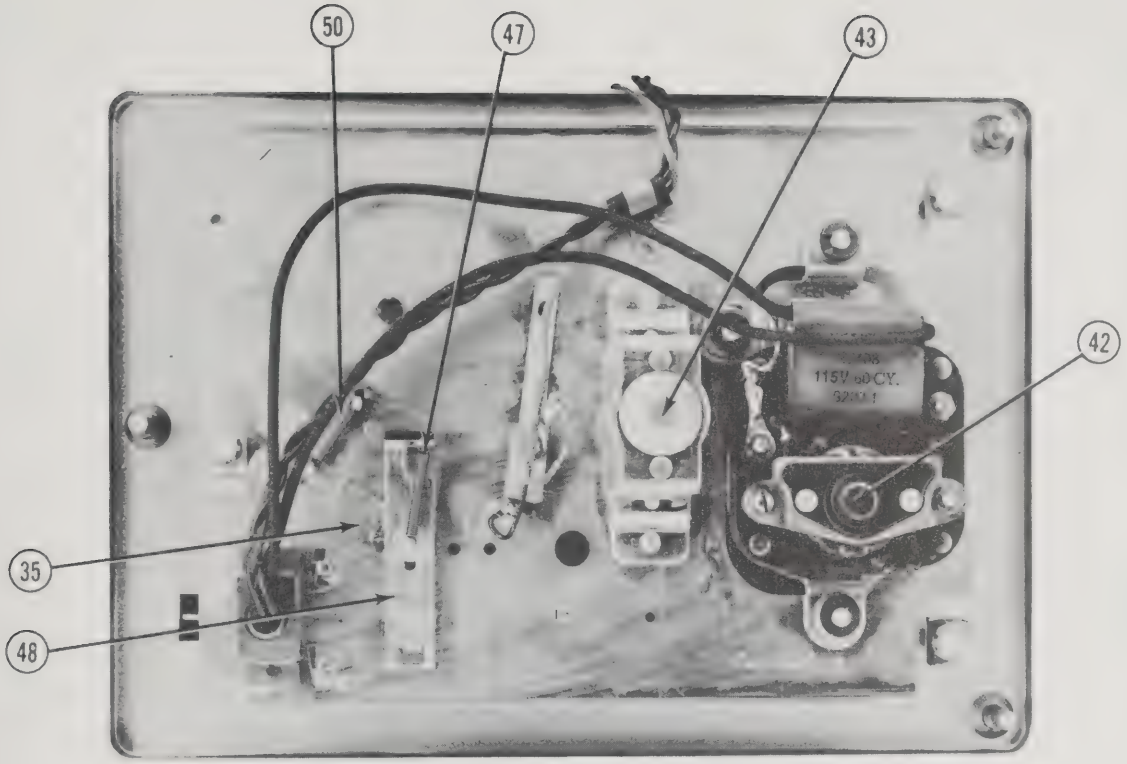

Figure 4

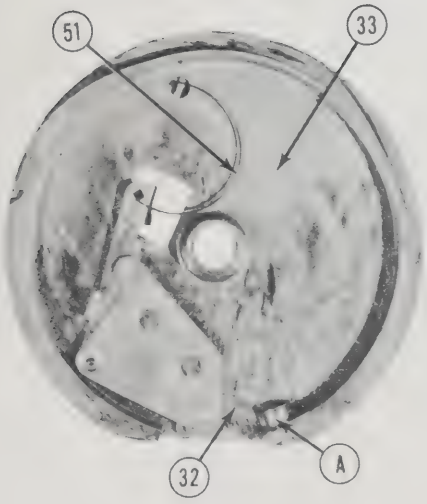

Figure 5

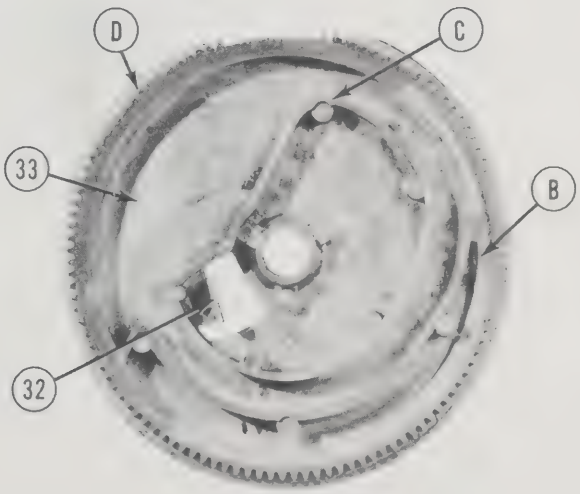

Figure 6

CAUTION: Be sure the separator blades (6) are not bent in reassembly, as this may cause failure of records to drop to the turntable. There should be a space of .040 - .048 clearance between the blades and the top of the record support.

LUBRICATION

Additional lubrication should not be required for a long period of time. However, in cases of unusual use, or high-operating temperature, the changer should be lubricated as follows: Use a good, light Graphite grease on all bearing surfaces, except the motor bearings, and on all other sliding surfaces.

CAUTION: Avoid overlubrication. Do not allow grease or oil to come in contact with the rubber idler wheel (40), the drive motor shaft and belt, or the turntable rim. All grease, oil, or any other foreign material should be cleaned from these parts with carbon tetrachloride or naphtha.

PARTS LIST

Ref. No.	Part No.	Description
1	9225	Spindle Assembly - Consists of: 9507 Lubriplate "Aero" 9298 Washer (Item 4) 9284 Screw Cover (Item 1) 9211-9 "C" Washer 9242 Pinion Spring (Item 19) 9239 Pinion Gear Assembly (Item 21) 9238-2 "C" Washer 3/8" (Item 44) 9237 Turntable (Item 10) 9236 Cap Screw (Item 2) 9235-1 Spindle Cap (Item 3) 9234 Shelf Pin (Item 9) 9233 Shelf Spring (Item 8) 9232 Record Support (Item 7) 9229 Separator Assembly (Item 6) 9226 Turntable Shaft Assembly (Item 5)
1	9284	Screw Cover
2	9236	Cap Screw
3	9235-1	Spindle Cap
4	9298	Washer
*5	9226	Turntable Shaft Assembly - Consists of: 9228 Support Plate (2 Req.) 9227 Turntable Shaft (1 Req.) 1740-72 Rivet (2 Req.)
*6	9229	Separator Assembly - Consists of: 9231 Separator Bracket 9230 Separator Blade
7	9232	Record Support
8	9233	Shelf Spring
9	9234	Shelf Pin
10	9237	Turntable
11	9247	Tone Arm Assembly - Consists of: 9261-2 Screws (2 Req.) (Item 13) 9260-1 Shure Cartridge (Item 18) 9260-2 Astatic Cartridge (Item 18) 9260-3 Electro-Voice Cartridge (Item 18) 9259 Counterweight (1 Req.) (Item 17) 9253 Tone Arm Mounting Assembly (1 Req.) (Item 11A) 9252 Safety Spring (2 Req.) (Item 14) 9251 Pivot Plug (1 Req.) (Item 15) 9250 Pivot Pin (1 Req.) 9249 Adjusting Bracket (1 Req.) (Item 16) 9248 Tone Arm (1 Req.) (Item 11) 5136-2 Binding Hd. Screw (2 Req.) (Item 12) 3557-8 R. H. Screw #8-32 (1 Req.) 1750-6 Hex Nut #8-32 (1 Req.)
*11A	9253	Tone Arm Mounting Assembly - Consists of: 9256 Lift Lever Bushing (1 Req.) 9255 Lift Lever (1 Req.) 9254 Tone Arm Mounting Bracket (1 Req.) 1740-67 Rivet (1 Req.)
12	5136-2	Binding Hd. Screw
13	9261-2	Screws
14	9252	Spring (Safety)
15	9250	Pivot Pin
16	9249	Adjusting Bracket
17	9259	Counterweight
18	9260-1	Cartridge Needle and Clips (Shure)
	9260-2	Cartridge (Astatic) Needle and Clips
	9260-3	Cartridge (Electro-Voice) Needle and Clips
19	9242	Pinion Spring
20	1842-3	Steel Ball 3/16" Diameter
*21	9239	Pinion Gear Assembly - Consists of: 9240 Drive Gear 9241 Drive Key
22	4252-1	Mounting Screw
*23	9371	Knob Assembly - Consists of: 9267 Knob 9270 Knob Spring
24	9238-1	"C" Washer
25	9246	Lift Pin
26	9268	Arm Rest - Rubber Pad
*27	9263	Top Base Assembly - Consists of: 9264 Top Base 9272 Mounting Studs
*28	9221	Gear Mounting Assembly - Consists of: 9222 Gear Mounting Bracket 9224 Tone Arm Bearing
29	5878-1	Washer
*30	9243	Tone Arm Shaft Assembly - Consists of: 9244 Tone Arm Shaft 9245 Tone Arm Lever
31		Screw-Gear Mounting Assembly
32	9216	Segment Gear
*33	9214	Cam Gear Assembly - Consists of: 9215 Cam Gear 9216 Segment Gear 9217 Segment Gear Pin 9218 Segment Spring 9219 Segment Plate
*34	9202	Sub-base Assembly - Consists of: 1740-43 Tubular Rivet Cad. Plated 4302 Cable Clamp 6878 Motor Mounting Stud 7110 Wire 3" Long 9203 Sub Base (Item 34) 9204 Index Lever Assembly (Item 35) 9208 Stud 9223 Gear Stud 9340 Royco #5
*35	9204	Index Lever Assembly - Consists of: 9205 Index Lever 9206 Shoulder Rivet 9207 Roller
36	9266	Switch Lever
37	5027-3	Binder Hd. Machine Screw
38		"C" Washer (Part of Item 42)
39		Fiber Washer (Part of Item 42)
40		Idler Wheel (Part of Item 42)
41		Sub-Plate Mounting Screw
42	9220-1	Phonomotor (Russell)
	9220-2	Phonomotor (Alliance)
*43	9212	Bearing Assembly - Consists of: 1740-62 Rivet (2 Req.) 1740-63 Rivet (2 Req.) 2111-12 Lockwasher (2 Req.) 4239 Bearing (2 Req.) 4200 Bearing Support (1 Req.) 4241 Bearing Support (2 Req.) 5096-2 #6-32 Rd. Hd. Screw (2 Req.) 9213 Bearing Mounting Bracket
44	9238-2	"C" Washer
45	4248-7	Flat Washer
46	9238-2	"C" Washer
47	8666	Reject Spring
48	9209	Reject Lever
49		Flat Washer
50	9210	Index Spring
51	9218	Segment Spring

* These Parts Furnished in Assemblies Only.

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2T51 (CH. KCS45), 2T60 (CH. KCS45A)

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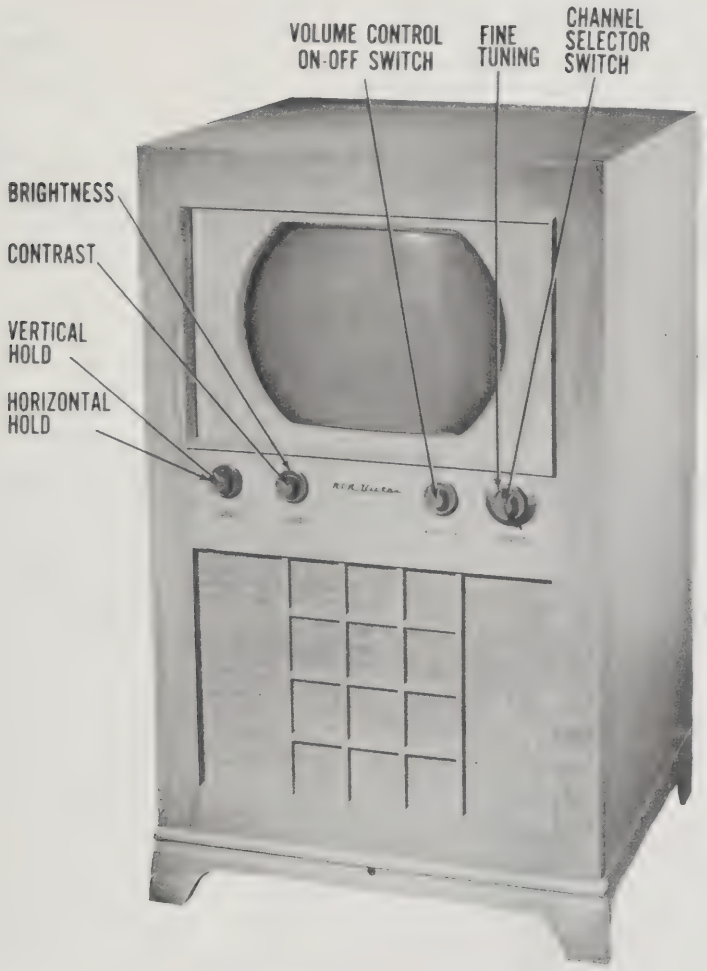

RCA VICTOR MODEL 2T60

TRADE NAME	RCA Victor, Models 2T51 (Ch. KCS45), 2T60 (Ch. KCS45A)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, New Jersey
TYPE SET	Television Receiver
TUBES	Twenty One
POWER SUPPLY	110-120 Volts AC 60 Cycle — RATING 1.5 Amp. at 117 Volts AC
TUNING RANGE–	Channels 2 thru 13

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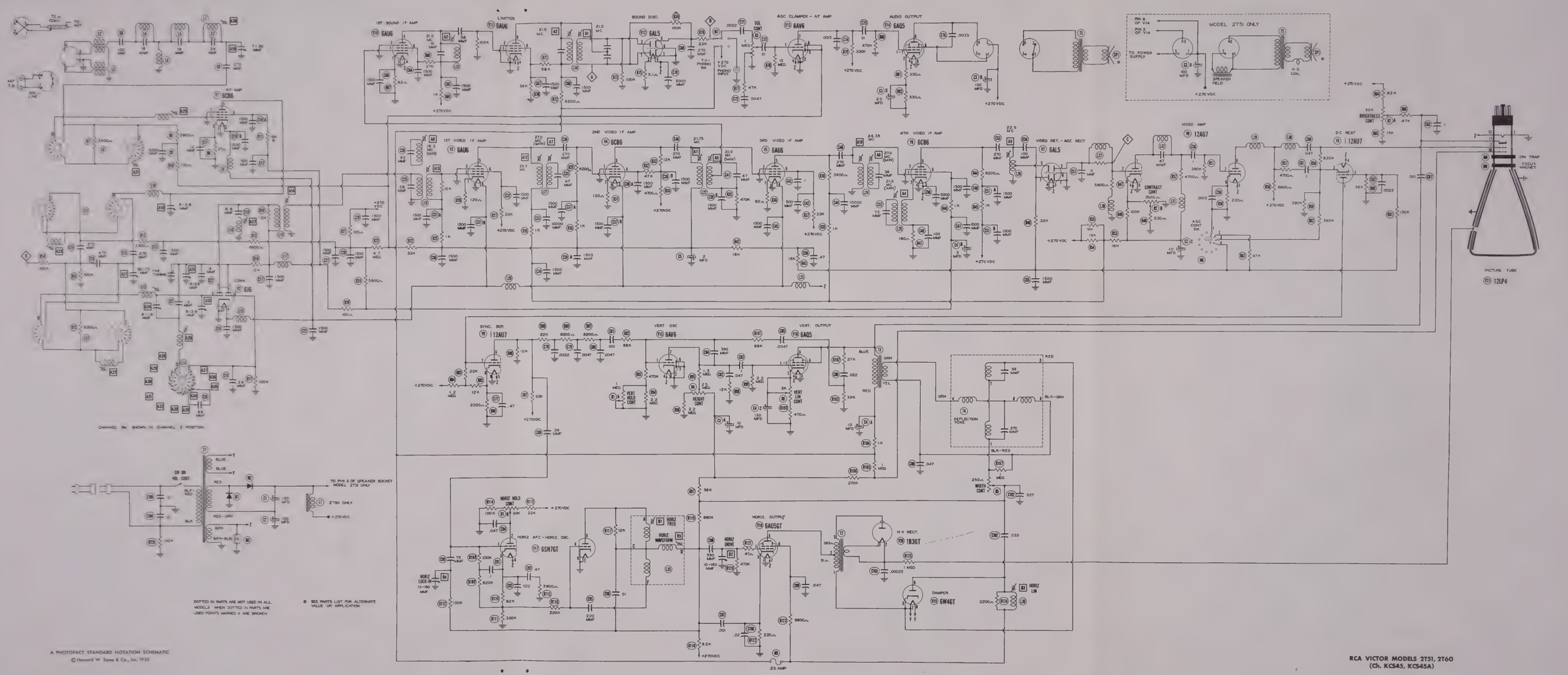
DATE 11-50 SET 111 FOLDER 11


RCA VICTOR MODELS 2T51, 2T60
(Ch. KCS45, KCS45A)
RCA VICTOR MODELS 2T51, 2T60
(Ch. KCS45, KCS45A)
MODEL 2T51 ONLY
CHANNEL SW. SHOWN IN CHANNEL 2 POSITION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
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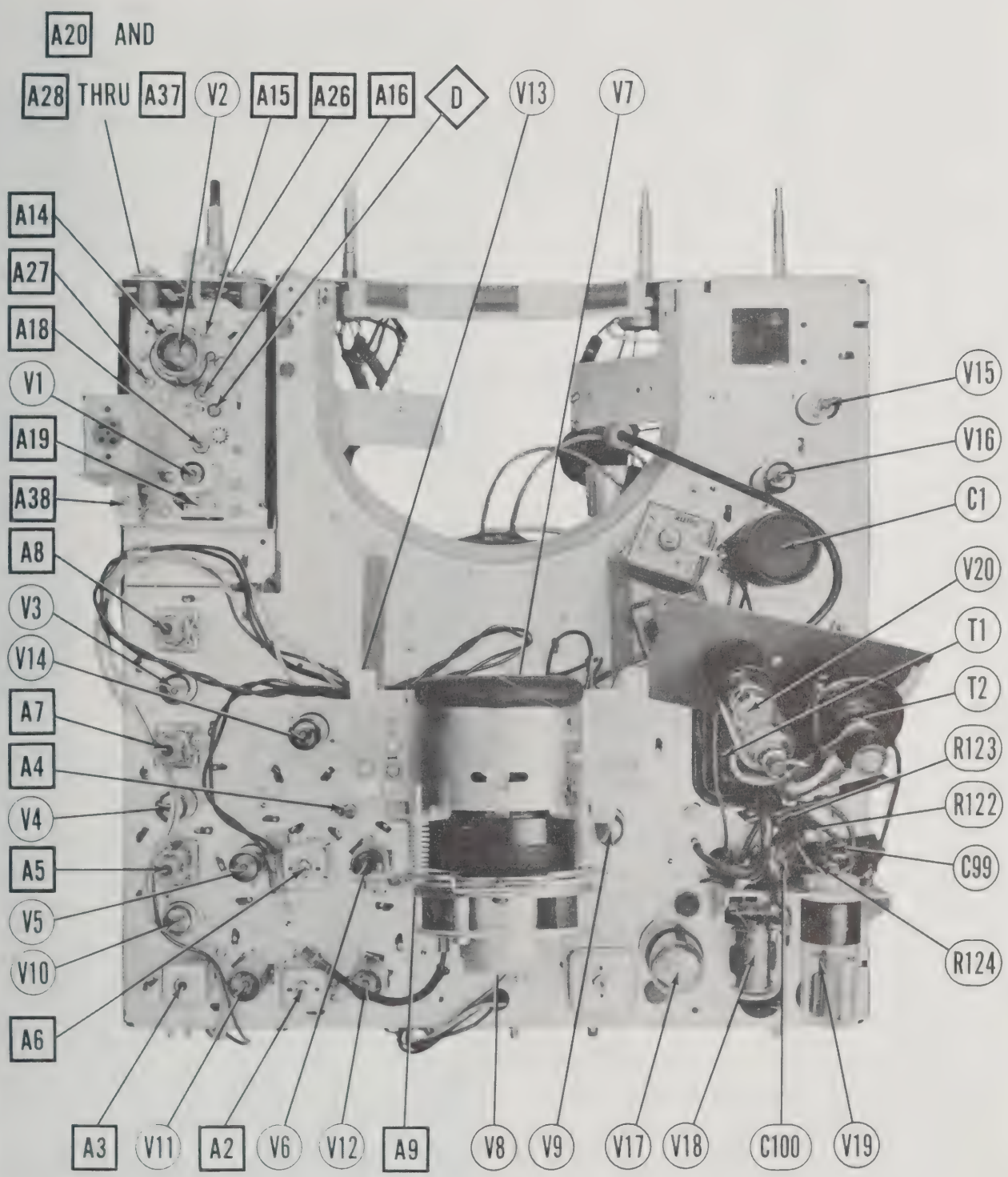
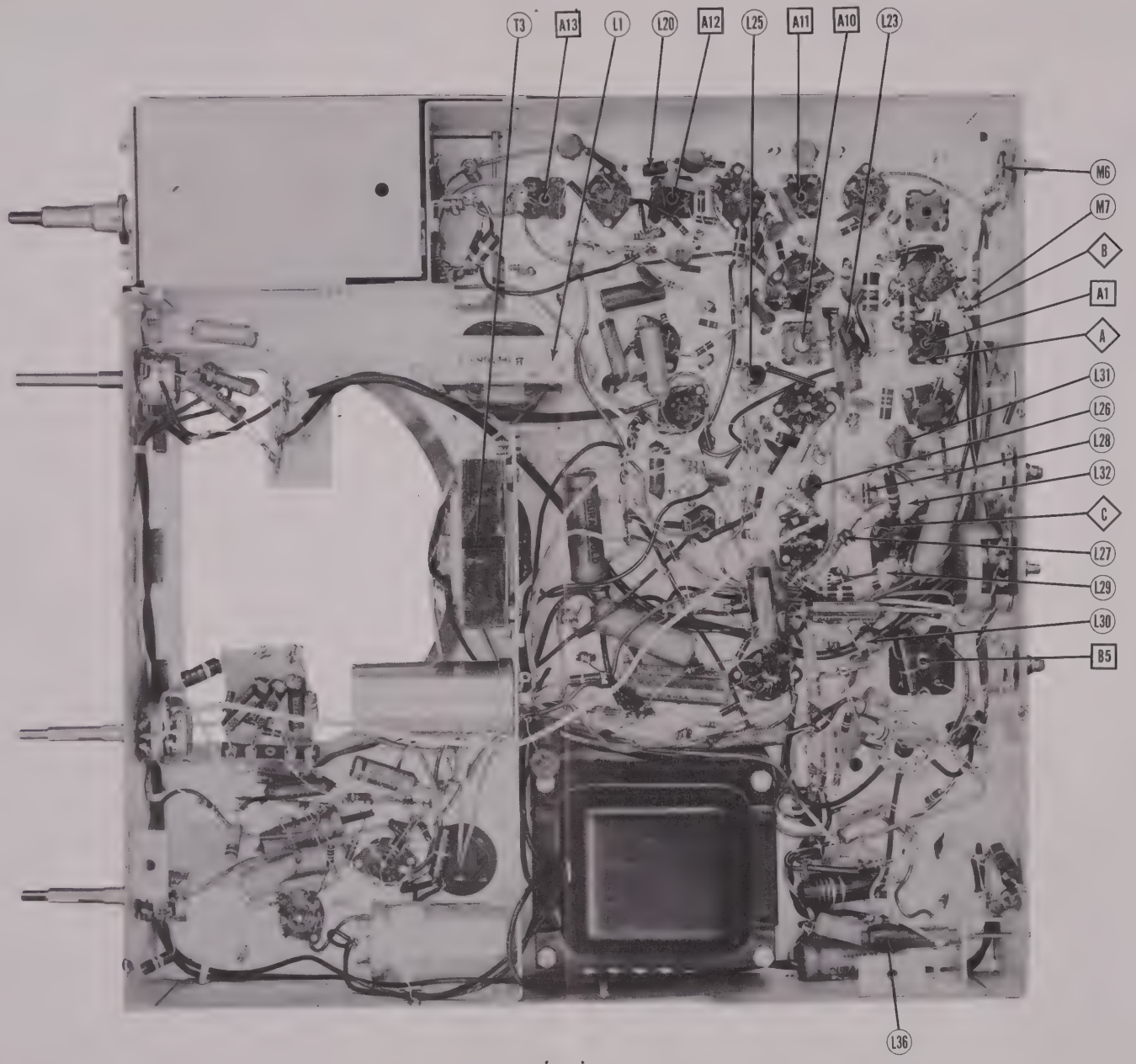
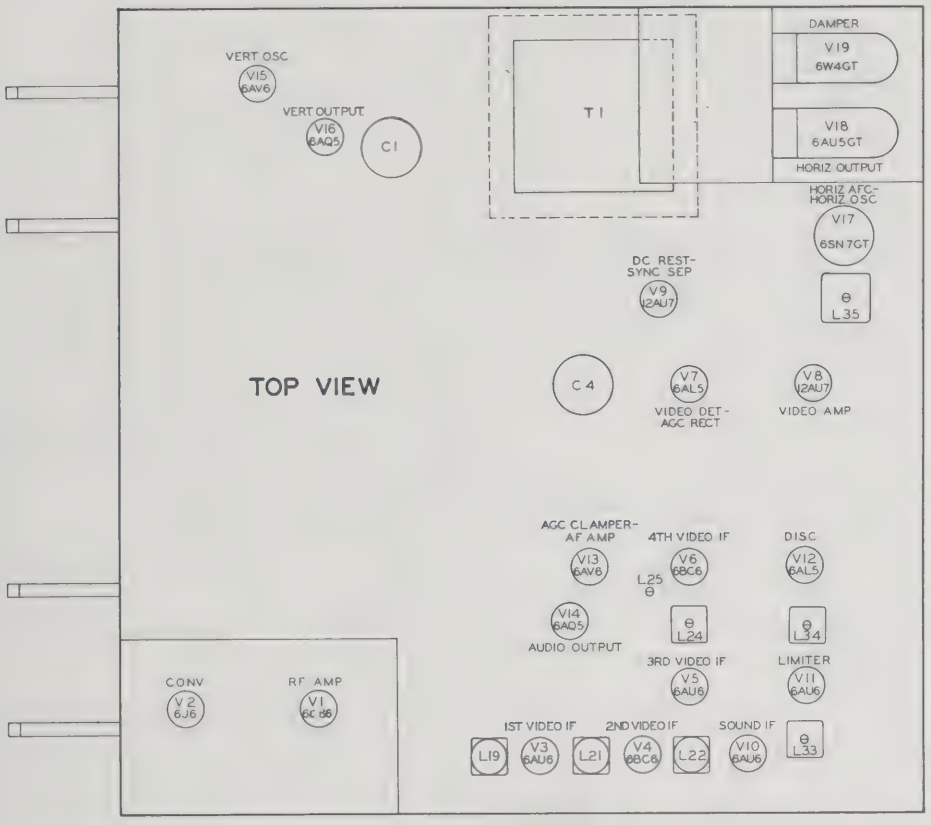
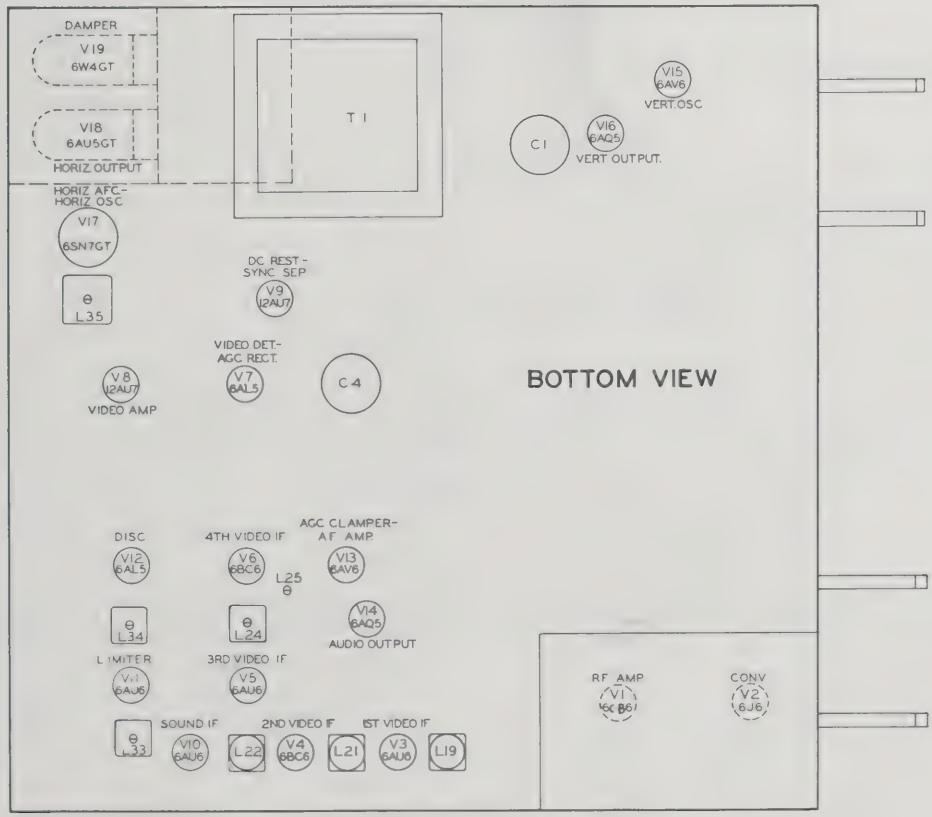


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION





TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To prevent the high voltage shock hazard remove the horizontal output tube (V18) from its socket.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to pin 1 (Grid) of 6AU6 (V11). Low side to chassis.	21MC (Unmod.)	Any	DC Probe to Point (A). Common to chassis.	A1, A2	Detune A1. Adjust A2 for maximum deflection.
2.	Direct	"	"	"	DC Probe to Point (B). Common to chassis.	A1	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
3.	Direct	High side to pin 1 (Grid) of 6AU6 (V10). Low side to chassis.	"	"	DC Probe thru 100KΩ to pin 1 (Grid) of 6AU6 (V11). Common to chassis.	A3	Adjust for maximum deflection.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to pin 1 (Grid) of 6AU6 (V10). Low side to chassis.	21MC (450KC SWP)	21MC	Any	Vert. Amp. thru 100KΩ to pin 1 (Grid) of 6AU6 (V11). Low side to chassis.	A3	Adjust for maximum amplitude and symmetry as per figure 1.
2.	Direct	"	"	"	"	Vert. Amp. to Point (B). Low side to chassis.	A1, A2	Adjust A1 to place 21MC at center of diagonal line as per figure 2. Adjust A2 for maximum amplitude and straightness of diagonal line. Continue with step 4.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 with pin 1 removed to prevent erroneous indications.
In steps 4 thru 10 connect the negative terminal of a 3 volt battery to the junction of R22 and R25. Connect the positive terminal to chassis.
In step 11 reduce the 3 volts bias to 1 volt.
In step 12 connect a 4.5 volt battery as in steps 4 thru 10.
Before attempting step 11 connect 330Ω resistors across R29, R33, R38 and R44.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	Not used	21MC (Unmod.)	Any	Use VTVM. DC Probe to Point (C). Common to chassis.	A4, A5	Adjust for MINIMUM deflection.
5.	Direct	"	"	27MC	"	"	A6, A7	"
6.	Direct	"	"	19.5MC	"	"	A8	"
7.	Direct	"	"	22.5MC	"	"	A9	Adjust for maximum deflection.
8.	Direct	"	"	24.35MC	"	"	A10	"
9.	Direct	"	"	21.75MC	"	"	A11	"
10.	Direct	"	"	25.3MC	"	"	A12	"
11.	Direct	"	23.5MC (10MC SWP)	22.3MC 25.4MC	"	Vert. Amp. to Point (C). Low side to chassis.	A13, A14	Adjust for response curve similar to figure 3 with markers as shown. Remove the 330Ω resistors.
12.	Direct	"	"	21.85MC 24.75MC 25.5MC 26.25MC	"	"		Check for response curve similar to figure 4 with markers as shown. If necessary, slightly retouch A9 thru A14 for proper response.

RF TUNER ALIGNMENT

Remove the dummy converter tube and replace original 6J6 in its socket.
Disconnect the co-ax link from terminal 2 of the terminal board on the RF tuner and connect a 39Ω carbon resistor between terminals 1 and 2.
Loosely couple the link to the terminal board of the RF tuner.
Turn the AGC control fully counter-clockwise.
Connect the negative terminal of a 3 volt battery to terminal 3 on the terminal board of the RF tuner and the positive terminal to chassis.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE OR CONNECT VTVM	ADJUST	REMARKS
13.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	Not used	215.75MC	13	VTVM DC Probe to Point (B). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
14.	"	"	183MC (10MC SWP)	181.25MC 185.75MC	8	SCOPE Vert. Amp. to Point (D). Low side to chassis.	A16, A17, A18, A19	Adjust for shape of response curve and band width as shown in figure 5.
15.	"	"	Not used	87.75MC	6	VTVM DC Probe to Point (B). Common to chassis.	A20	Adjust as in step 13.
16.	"	"	85MC (10MC SWP)	83.25MC 87.75MC	6	SCOPE Vert. Amp. to Point (D). Low side to chassis.	A21, A22, A23	Adjust for response curve similar to figure 6.
17.	Connect the VTVM to Point D and adjust A24 for -3 volts reading. If necessary, slightly retouch A21, A22, A23 and A17 for proper response on channel 6. Repeat these retouching adjustments until proper response is obtained and a -3 volts is obtained at point (D).							

FIG. 1

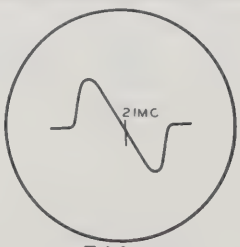


FIG. 2

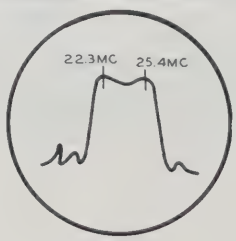


FIG. 3

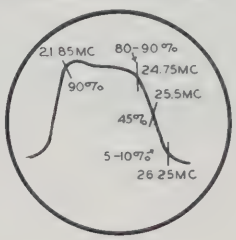


FIG. 4

ALIGNMENT INSTRUCTIONS (CONT.)

18.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	Not used	185.75MC	8	VTVM DC Probe to Point Ⓑ. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
19.	"	"	183MC (10MC SWP)	181.25MC 185.75MC	8	SCOPE Vert. Amp. to Point Ⓓ. Low side to chassis.		Readjust A16, A17 and A19 for correct shape of response curve, frequency, and bandwidth as shown in figure 5. If necessary, readjust A18.
20.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	"	A25	Adjust for maximum amplitude of response curve midway between the markers. Then overshoot adjustment by turning slug in same direction a little more than the turning required to reach maximum amplitude from the initial setting. Adjust A19 for maximum amplitude.
21.	"	"	Not used	215.75MC	13	VTVM DC Probe to Point Ⓑ. Low side to chassis.	A26	Adjust for zero reading as in step 18. Then overshoot adjustment as in step 20. Adjust A15 to reset oscillator to proper frequency.
22.	"	"	213MC (10MC SWP)	211.25MC 215.75MC	13	SCOPE Vert. Amp. to Point Ⓓ. Low side to chassis.		Check all high band channels for proper response with markers above 80%. If markers do not appear well within 80%, repeat step 14. If A19 is adjusted, the adjustment should be overshot a small amount and compensated for by adjusting A25 for maximum amplitude between the sound and video markers. If the valley in the top of the curves for the high channels is deeper than normal, adjust A27 to flatten the curve. In later productions A24 may be fixed and will not require adjustment.
			207MC (10MC SWP)	205.25MC 209.75MC	12			
			201MC (10MC SWP)	199.25MC 203.75MC	11			
			195MC (10MC SWP)	193.25MC 197.75MC	10			
			189MC (10MC SWP)	187.25MC 191.75MC	9			
			183MC (10MC SWP)	181.25MC 185.75MC	8			
			177MC (10MC SWP)	175.25MC 179.75MC	7			
23.	Check the oscillator frequency for the high band channels. If the oscillator is off frequency, overshoot the adjustment of A15 and compensate for by adjusting A26 for zero voltage at Point B .							
24.	Repeat step 15.							
25.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	83.25MC 87.75MC	6	SCOPE Vert. Amp. to Point Ⓓ. Low side to chassis.		Check for reponse curves similar to figure 6. If necessary, slightly readjust A21, A22 and A23 for proper response.
26.	Check the voltage at Point D. If necessary adjust A24 for a -3 volt reading. If A24 is adjusted, turn the channel switch to channel 8 and readjust A16 for proper response.							
27.	Two 120Ω carbon res.	Across antenna terminals with 120Ω in each lead.	85MC (10MC SWP)	83.25MC 87.75MC	6	SCOPE Vert. Amp. to Point Ⓓ. Low side to chassis.		Check all low band channels for proper shape of response curves as shown in figure 6 and the injection voltage at Point D which should be -3 volts. Also recheck channels 7 thru 13.
28.	"	"	Not used	215.75MC	13	VTVM DC Probe to Point Ⓑ. Common to chassis.		If necessary adjust A15 for zero reading as in step 13.
29.	"	"	"	209.75MC	12	"	A28	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
				203.75MC	11		A29	
				197.75MC	10		A30	
				191.75MC	9		A31	
				185.75MC	8		A32	
				179.75MC	7		A33	
				87.75MC	6		A20	
				81.75MC	5		A34	
				71.75MC	4		A35	
				65.75MC	3		A36	
				59.75MC	2		A37	
30.	Turn channel switch to channel 8 and adjust A14 for proper response. When A14 is properly adjusted the curve will be slightly wider with a slightly deeper valley at the top. Check all channels for proper response, oscillator injection voltage at Point Ⓓ, and oscillator frequency. Slight touch-up adjustments may be made if necessary. If A16 and A24 are changed considerably, a recheck of the oscillator frequency on all channels should be made.							
31.	Disconnect the 39Ω resistor from terminals 1 and 2 on the terminal board of the RF Tuner and reconnect the co-ax link. Repeat steps 11 and 12 of Video IF Alignment.							

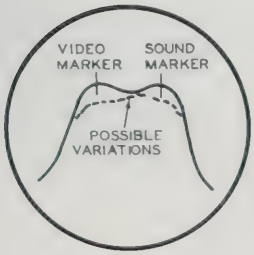


FIG.5

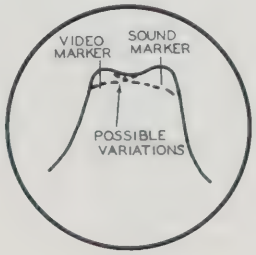
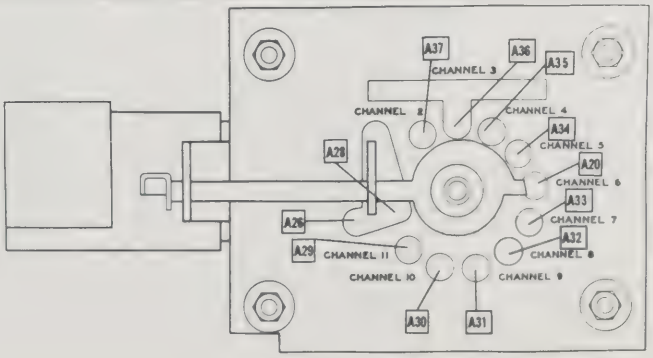


FIG.6



OSC. ALIGNMENT POINTS

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC6	-.1VDC	.3VDC	0V.	6.3VAC	180VDC	95VDC	0V.		
V 2	6J6	65VDC	130VDC	0V.	6.3VAC	-.5VDC	§-2.7VDC	0V.		
V 3	6AU6	0V.	0V.	0V.	6.3VAC	105VDC	160VDC	1.2VDC		
V 4	6BC6	0V.	1.2VDC	6.3VAC	0V.	120VDC	105VDC	0V.		
V 5	6AU6	0V.	0V.	0V.	6.3VAC	75VDC	155VDC	1VDC		
V 6	6BC6	0V.	1.7VDC	6.3VAC	0V.	195VDC	135VDC	0V.		
V 7	6AL5	0V.	-.2VDC	6.3VAC	0V.	0V.	0V.	-.2VDC		
V 8	12AU7	85VDC	.2VDC	4.8VDC	6.3VAC	6.3VAC	170VDC	0V.	3VDC	0V.
V 9	12AU7	9VDC	0V.	1.4VDC	6.3VAC	6.3VAC	40VDC	9VDC	9VDC	0V.
V 10	6AU6	0V.	0V.	0V.	6.3VAC	250VDC	160VDC	.9VDC		
V 11	6AU6	-.7VDC	0V.	0V.	6.3VAC	215VDC	65VDC	0V.		
V 12	6AL5	0V.	-.1VDC	1.3VAC	6.3VAC	.1VDC	0V.	-.1VDC		
V 13	6AV6	-.6VDC	0V.	0V.	6.3VAC	-.2VDC	-.2VDC	100VDC		
V 14	6AQ5	0V.	17VDC	0V.	6.3VAC	260VDC	270VDC	0V.		
V 15	6AV6	-7.4VDC	0V.	0V.	6.3VAC	0V.	0V.	245VDC 100VDC		
V 16	6AQ5	0V.	2.2VDC 5.4VDC	0V.	6.3VAC	245VDC	245VDC	0V.	.	
V 17	6SN7GT	-1.2VDC	140VDC	8.8VDC	43VDC	175VDC	0V.	0V.	6.3VAC	
V 18	6AU5GT	-3.6VDC	0V.	20VDC	Inf.	*	Inf.	6.3VAC	190VDC	
V 19	6W4GT	0V.	0V.	420VDC	0V.	250VDC	0V.	420VDC	420VDC	
V 20	1B3GT	* DO NOT MEASURE.								
V 21	12LP4	0V.	.4VDC	PIN 10 370VDC	PIN 11 110VDC	PIN 12 6.3VAC				

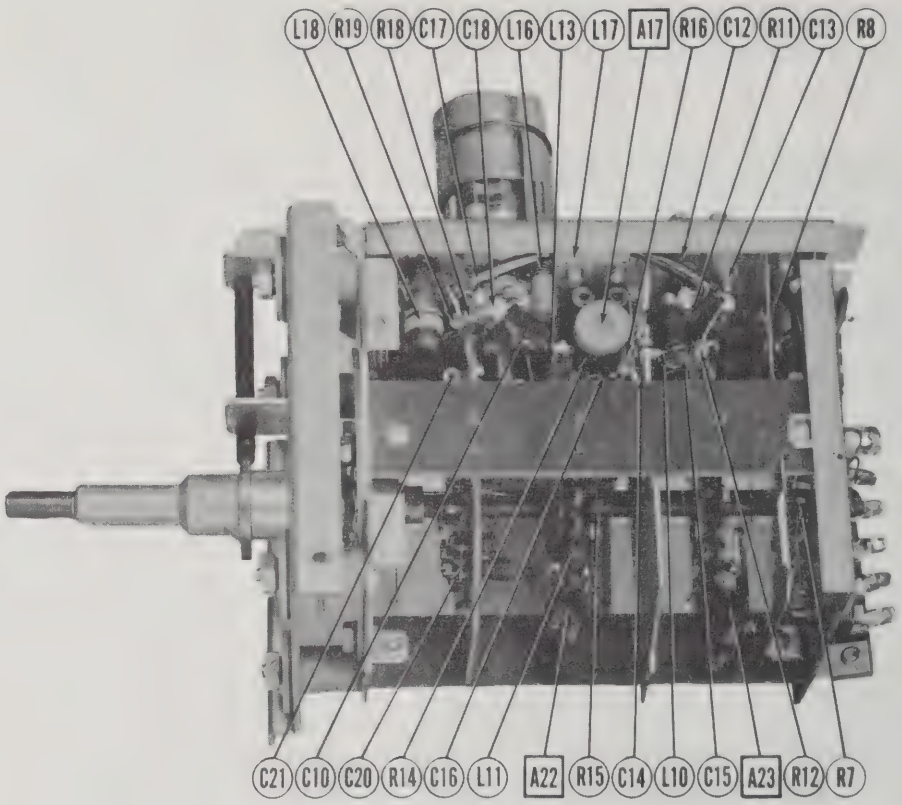
TURN "AGC" SWITCH CLOCKWISE.
TURN TV-PHONO SWITCH TO "TV" POSITION.
§ TAKEN WITH VACUUM TUBE VOLTMETER.
* DO NOT MEASURE.

RESISTANCE READINGS

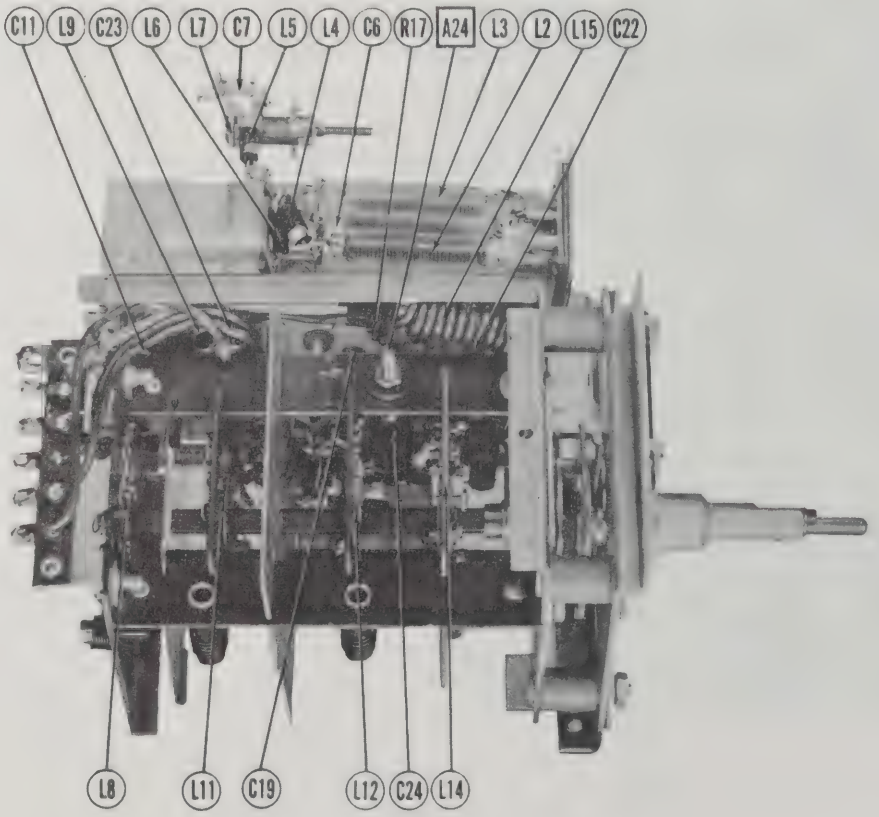
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC6	75KΩ	27Ω	0Ω	.1Ω	†10KΩ	†2.8KΩ	0Ω		
V 2	6J6	†16KΩ	†5.8KΩ	0Ω	.1Ω	108KΩ	100KΩ	0Ω		
V 3	6AU6	37KΩ	0Ω	0Ω	.1Ω	†10KΩ	†33KΩ	120Ω		
V 4	6BC6	45KΩ	120Ω	.1Ω	0Ω	†17KΩ	†50KΩ	0Ω		
V 5	6AU6	36KΩ	0Ω	0Ω	.1Ω	†14KΩ	†33KΩ	82Ω		
V 6	6BC6	.1Ω	180Ω	.1Ω	0Ω	†9.2KΩ	†6.7KΩ	0Ω		
V 7	6AL5	0Ω	5.6KΩ	.1Ω	0Ω	.1Ω	0Ω	33KΩ		
V 8	12AU7	†30KΩ	5.6KΩ	3.6KΩ	.1Ω	.1Ω	†6.8KΩ	390KΩ	220Ω	0Ω
V 9	12AU7	36KΩ	40KΩ	200KΩ	.1Ω	.1Ω	†18KΩ	36KΩ	2.2KΩ	0Ω
V 10	6AU6	470KΩ	0Ω	0Ω	.1Ω	†1000Ω	†28KΩ	82Ω		
V 11	6AU6	100KΩ	0Ω	0Ω	.1Ω	†8.2KΩ	†35KΩ	0Ω		
V 12	6AL5	0Ω	100KΩ	5.1Ω	.1Ω	200KΩ	0Ω	100KΩ		
V 13	6AV6	10 Meg.	0Ω	0Ω	.1Ω	70KΩ	70KΩ	†330KΩ		
V 14	6AQ5	470KΩ	660Ω	0Ω	.1Ω	†400Ω	†43Ω	470KΩ		
V 15	6AV6	1.2 Meg.	0Ω	0Ω	.1Ω	0Ω	0Ω	#1.5 Meg. #2.5 Meg.		
V 16	6AQ5	2.2 Meg.	5000Ω 470Ω	0Ω	.1Ω	†1.6KΩ	†1.6KΩ	2.2 Meg.		
V 17	6SN7GT	1.6 Meg.	†40KΩ	410KΩ	550KΩ	†82KΩ	0Ω	0Ω	.1Ω	
V 18	6AU5GT	470KΩ	0Ω	220Ω	Inf.	#30Ω	Inf.	.1Ω	†6.8KΩ	
V 19	6W4GT	Inf.	Inf.	400KΩ	Inf.	†85Ω	Inf.	#0Ω	#.3Ω	
V 20	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #400Ω
V 21	12LP4	0Ω	1 Meg.	PIN 10 #320KΩ	PIN 11 100KΩ	PIN 12 .1Ω				

TURN "AGC" SWITCH CLOOKWISE.
TURN TV-PHONO SWITCH TO "TV" POSITION.
† MEASURED FROM OUTPUT OF M2.
# MEASURED FROM PIN 3 OF V19.

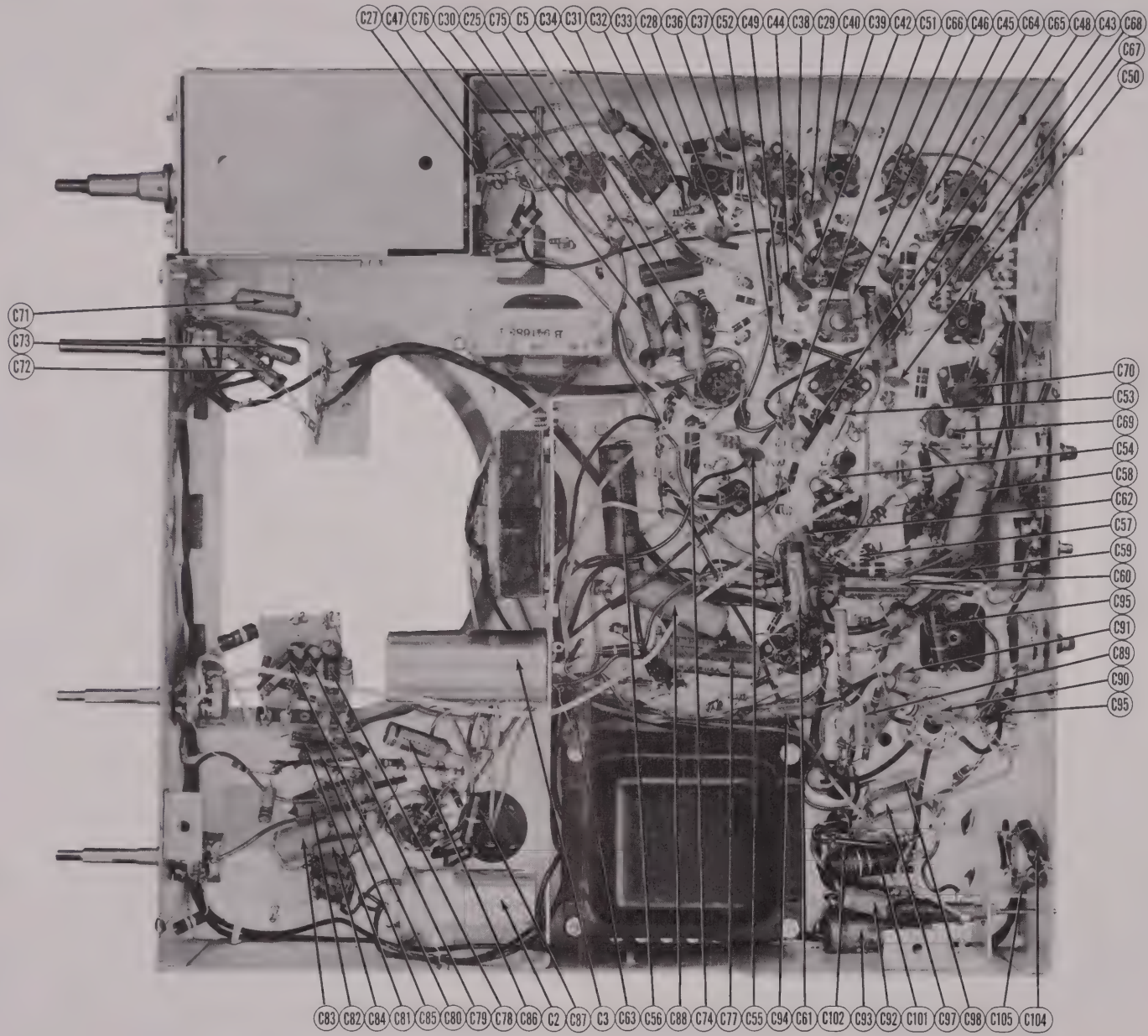
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



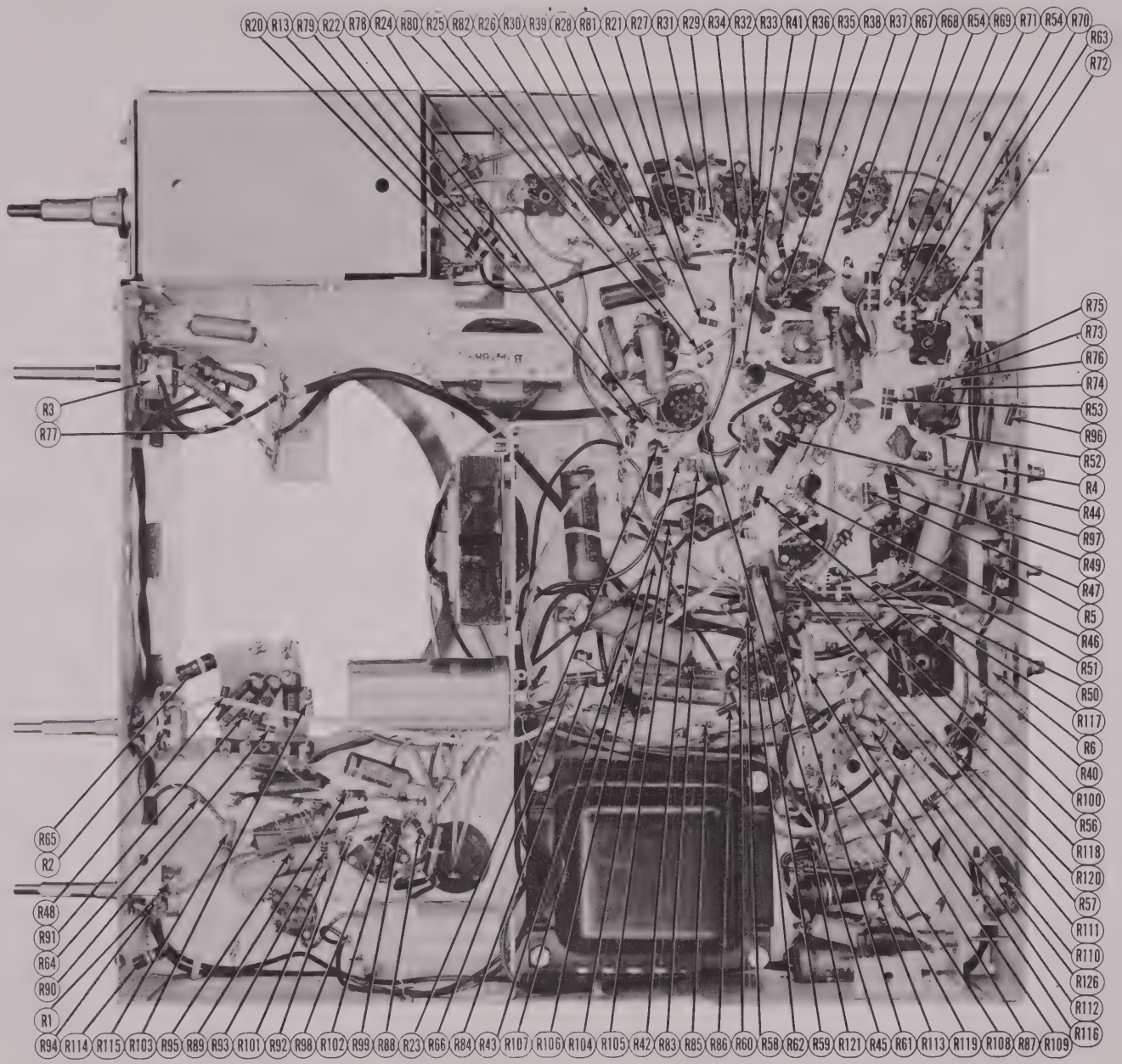
RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE



CHASSIS BOTTOM VIEW—CAPACITOR IDENTIFICATION



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amp.	6CB6	6CB6	6CK	
V2	Converter	6J6	6J6	7BF	
V3	1st Video IF	6AU6	6AU6	7BK	
V4	2nd Video IF	6CB6	6CB6	6CK	
V5	3rd Video IF	6AU6	6AU6	7BK	
V6	4th Video IF	6CB6	6CB6	6CK	
V7	Video Det. -AGC Rect.	6AL5	6AL5	6BT	
V8	Video Amp.	12AU7	12AU7	9A	
V9	DC Rest. -Sync. Sep.	12AU7	12AU7	9A	
V10	1st Sound IF	6AU6	6AU6	7BK	
V11	Limiter	6AU6	6AU6	7BK	
V12	Sound Discr.	6AL5	6AL5	6BT	
V13	AGC Clamper-AF Amp.	6AV6	6AV6	7BT	
V14	Audio Output	6AQ5	6AQ5	7BZ	
V15	Vert. Osc.	6AV6	6AV6	7BT	
V16	Vert. Output	6AQ5	6AQ5	7BZ	
V17	Hor. AFC-Hor. Osc.	6SN7GT	6SN7GT	8BD	
V18	Hor. Output	6AU6GT	6AU5GT	6CK	
V19	Damper	6W4GT	6W4GT	4CG	
V20	HV Rect.	1B3GT	1B3GT	3C	
V21	Picture Tube	12LP4	12LP4	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	150	200	75220	E4A85		UPE15020		TVL-1540	Filter
C2	150	200	75220	E4A85		UPE15020		TVL-1540	Filter
C3A	10	450	75219	AFH2J202H4A		UPT419			▲ Decoupling
B	100	350							■ Filter
C	10	350							▲ Decoupling
D	20	25							Output Cathode
C4A	10	350	75218	AFH21H30B		UPT316			■ Vert. Output Dec.
B	5	350							▲ Decoupling
C	150	50							Vert. Output Cath.
C5	2	50	73747	SRE50/2		BBR2-50		TVA-1301	AGC Filter
C6	100		75437	SI100	D6-101		GP1K-100	19C11	RF Coupling
C7	39		75196		TCN-39		N750L-39		Fixed Trimmer
C8	270		75199	SI270	D6-271		GP2K-270	19C31	RF Coupling
C9	5000		73473	BPD-005	DD-502		811-005	29C1	AGC Filter
C10A	1500		75089	BPD-2 x 0015	DD-2-152		882-2 x 0015	29C6	RF Screen
B	1500								RF Filament
C11	12		75200	SI12	TCZ-12		GP1K-12		RF Cathode
C12	1500		75166						RF Bypass
C13	1500		75166						RF Bypass
C14	270		75199	SI270	D6-271		GP2K-270	19C31	RF Coupling
C15	270		75199	SI270	D6-271		GP2K-270	19C31	RF Coupling
C16	470		75198	SI470	D6-471		GP2K-470	19C15	RF Coupling
C17	1500		75166						Conv. Decoupling
C18	6.8		75197	SI6.8NPO	TCZ-6.8		NPOK-6.8		Fixed Trimmer
C19	39		75196		TCN-39		N750L-39		Fixed Trimmer
C20	.68		71504		TCZ-.68				Fixed Trimmer
C21	15		45465	SI15	TCZ-15		GP1K-15	19C5	Osc. Feedback
C22	4		75289						Osc. Feedback
C23	1500		75166						Filament Bypass
C24	1500		73748						Conv. Fil. Bypass
C25	56		71924		TCN-56		N750L-56		Fixed Trimmer
C26	82				TCZ-82		NPOM-82		Fixed Trimmer
C27	1500		73748	BPD-0015	DD-152	1W5D15	811-0015	19C20	RF Bypass
C28	1500		73748	BPD-0015	DD-152	1W5D15	811-0015	19C20	RF Bypass
C29	1500		73748	BPD-0015	DD-152	1W5D15	811-0015	19C20	RF Bypass
C30	1500		73748	BPD-0015	DD-152	1W5D15	811-0015	19C20	AGC Filter
C31A	1500		75089	BPD-2 x 0015	DD-2-152	1W5D15	882-2 x 0015	29C6	AGC Filter
B	1500					1W5D15			1st V. IF Fil.
C32	1500		73748	BPD-0015	DD-152	1W5D15	811-0015	19C20	1st V. IF Screen
C33	10000		73960	BPD-01	DD-103	PTE4S1	811-01	36C1	1st V. IF Plate Dec.
C34	1500		73748	BPD-0015	DD-152	1W5D15	811-0015	19C20	RF Bypass
C35	47				TCZ-47		NPOM-47	29C14	Fixed Trimmer
C36	270	1000	73091	1468-00025	D6-271	5W5T25	GP2K-270	19C31	IF Coupling
C37A	1500		75089	BPD-2 x 0015	DD-2-152	1W5D15	882-2 x 0015	29C6	AGC Filter
B	1500					1W5D15			2nd V. IF Fil.
C38A	1500		75089	BPD-2 x 0015	DD-2-152	1W5D15	882-2 x 0015	29C6	2nd V. IF Screen
B	1500					1W5D15			2nd V. IF Dec.
C39A	1500		75089	BPD-2 x 0015	DD-2-152	1W5D15	882-2 x 0015	29C6	AGC Filter
B	1500					1W5D15			S. IF Grid Filter
C40	270	1000	73091	1468-00025	D6-271	5W5T25	GP2K-270	19C31	IF Coupling
C41	47				TCZ-47		NPOM-47	29C14	Fixed Trimmer
C42	1500		73748	BPD-0015	DD-152	1W5D15	811-0015	19C20	3rd V. IF Screen
C43	.1	400	73551	P488-1	DF-104	PTE4P1		4TM-P1	3rd V. IF Screen
C44	10000		73960	BPD-01	DD-103	PTE4S1	811-01	36C1	3rd V. IF Plate Dec.
C45	5000		73473	BPD-0015	DD-152	1W5D15	811-0015	19C20	3rd V. IF Fil.
C46	270	1000	73091	1468-00025	D6-271	5W5T25	GP2K-270	19C31	IF Coupling
C47	1500		73748	BPD-0015	DD-152	1W5D15	811-0015	19C20	RF Bypass
C48	1500		73748	BPD-0015	DD-152	1W5D15	811-0015	19C20	4th V. IF Screen
C49	100		45469	SI100NPO	TCZ-100	5W5T1	NPOM-100	36C10	4th V. IF Cath.
C50	5000		73473	BPD-0015	DD-152	1W5D15	811-0015	19C20	4th V. IF Fil.
C51A	1500		75089	BPD-2 x 0015	DD-2-152	1W5D15	882-2 x 0015	29C6	4th V. IF Plate Dec.
B	1500					1W5D15			RF Bypass
C52	75			SI75NPO	TCZ-75		NPOM-75		Fixed Trimmer
C53	270	1000	73091	1468-00025	D6-271	5W5T25	GP2K-270	19C31	IF Coupling
C54	100		39396	SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C55	1500		73748	BPD-0015	DD-152	1W5D15	811-0015	19C20	AGC Filter
C56	.47	200	73787	P288-47		GT2P5		2TM-P47	AGC Filter
C57	10		53511	SI10NPO	TCZ-10	5W5Q1	NPOK-10	19C3	V. Diode Filter

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C58	1	400	73551	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C59	.0015	600	73598	P688-0015	D6-152	PTE6D2	GP2L-0015	6TM-D15	2nd V. Amp. Cath.
C60	.047	600	73592	P688-047	DF-503	PTE6S5		6TM-S47	Video Coupling
C61	.1	400	73551	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C62	.0022	600	83595	[illegible]	D6-222	PTE6D2	GP2M-0022	6TM-D22	DC Res. Grid Filter
C63	1	400	73551	P488-1	DF-104	PTE4P1		4TM-P1	Pic. Tube Cath.
C64	1500		75166	SI1500	D6-152	1W5D15	GP2L-0015	19C20	1st S. IF Screen
C65	1500		75166	SI1500	D6-152	1W5D15	GP2L-0015	19C20	1st S. IF Dec.
C66	1500		73748	BPD-0015	DD-152	1W5D15	811-0015	19C20	1st S. IF Cath.
C67	1500		75166	SI1500	D6-152	1W5D15	GP2L-0015	19C20	Limiter Screen
C68	1500		75166	SI1500	D6-152	1W5D15	GP2L-0015	19C20	Limiter Decoupling
C69	270		75244	SI270	D6-271	5W5T25	GP2K-270	19C31	RF Bypass
C70	5000		73473	[illegible]	DD-502	1D5D5	811-005	29C1	Discr. Fil.
C71	.0022	600	73595	P688-0022	D6-222	PTE6D2	GP2M-0022	6TM-D22	Audio Coupling
C72	.0047	600	73920	[illegible]	D6-472	PTE6D5	GP2M-0047	6TM-D47	Tone Comp.
C73	.01	400	73561	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Audio Coupling
C74	.0015	600	73598	P688-0015	D6-152	PTE6D2	GP2M-0015	6TM-D15	De-emphasis
C75	.01	400	73561	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Audio Coupling
C76	.0033	600	73795	[illegible]	D6-332	PTE6D3	GP2M-0033	6TM-D33	Output Plate Byp.
C77	47	200	73787	P288-47		GT2P5		2TM-P47	Sync. Sep. Cath.
C78	.0022	600	73595	[illegible]	D6-222	PTE6D2	GP2M-0022	6TM-D22	Integrator Net.
C79	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Integrator Net.
C80	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Integrator Net.
C81	.001	600	73801	P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Vert. Sync. Coupling
C82	.047	600	73592	P688-047		PTE6S5		6TM-S47	Vert. Discharge
C83	1	600	73557	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C83	390	1000	73094	1468-0004	D6-391	5WST4	GP2K-390	1FM-34	Vert. Feedback
C85	.0047	600	73920	P688-0047	D6-472	PTE6D5	GP2M-0047	6TM-D47	Vert. Feedback
C86	.022	600	73798	[illegible]	DF-203	PTE6S2		6TM-S22	Vert. Feedback
C87	.001	1000	75344	P1088-001		PTE16D1		MB-D1	Vert. Sweep Coupling
C88	.047	1000	73597	P1088-047		PTE16S4		MB-S5	RF Bypass
C89	39	1000	74726	1468-00004	D6-390	5W5Q4	GP1K-39	1FM-44	Hor. Sync. Coupling
C90	75	1000	75247	1469-HV-000075					Hor. Feedback
C91	.1	400	73551	P488-1	DF-104	PTE4P1		4TM-P1	AFC Filter
C92	.022	400	73562	P488-022	DF-203	PTE4S2		4TM-S22	AFC Filter
C93	47	200	73787	P288-47		GT2P5		2TM-P47	AFC Filter
C94	.047	400	73553	P488-047	DF-503	PTE4S5		4TM-S5	Hor. AFC Plate
C95	220	1000	75248	1468-00025	D6-221	5W5T25		1FM-325	Hor. Osc. Grid
C96	.01	600	73594	P688-01		PTE6S1		6TM-S1	Fixed Trimmer
C97	.001	600	75249	P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Hor. Discharge
C98	560	500	74250	1468-0005	D6-561	1WST5	GP2K-560	1FM-35	Hor. Sweep Coupling
C99	.047	1000	73597	P1088-047		PTE16S4		MB-S5	Hor. Output Screen
C100	22	200	73560	P488-22		GT2P25		2TM-P22	Hor. Output Cath.
C101	.033	600	73596	P688-033					Damper Filter
C102	.027	600	75345						Damper Filter
C103	.00025	12500	75250						HV Filter
C104	.01	600	75346	P688-01	D6-103	PTE6S1	811-01	6TM-S1	Line Filter
C105	.01	600	75346	P688-01	D6-103	PTE6S1	811-01	6TM-S1	Line Filter

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg	1/2	75215	Concentrikit BU-137 * BU-123 * E-187 *	RTV-65	SBB-510	Vert. hold control-panel Horiz. hold control-rear Attach per instructions in "Concentrikit"
B	500kΩ	1/2					
C	Shaft End						
R2A	50kΩ	1/2	75216		RTV-191	SBB-511	Brightness control-panel
B	3500Ω	1/2					Contrast control-rear
R3A	1 Meg.	1/2	75237	QI3-137X	AK-98	BT-72-S	Volume control, tapped at 200kΩ
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R3A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R3A per instructions
R4A	2.5 Meg	1/2	71440	QII-239	AM-84-S	AN-83	Height control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5	2500Ω	4	74945		RTV-60		Width control-Wire Wound
R6A	5000Ω	1/2	71441	QII-114	AM-19-S	AN-10	Vert. linearity control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R6A per instructions

* Additional Parts To Be Used With Concentrikit

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ARE ± 10% UNLESS OTHERWISE STATED
R7	3900Ω	1/2		BTS-3900	RF Coil Shunt
R8	27Ω	1/2			RF Amp. Cathode
R9	3900Ω	1/2		BTS-3900	RF Amp. Grid
R10	150Ω	1/2		BTS-150	AGC Network
R11	18kΩ	1/2			RF Amp. Screen-See Note 1
R12	3300Ω	1/2		BTS-3300	RF Amp. Plate
R13	6800Ω	2			RF Amp. Plate Decoupling
R14	100kΩ	1/2			Series Test Point
R15	8200Ω	1/2			RF Coil Shunt
R16	100kΩ	1/2			Conv. Grid
R17	100kΩ	1/2			Osc. Grid
R18	10kΩ	1/2			Osc. Plate
R19	10kΩ 5%	1/2			Conv. Transformer Shunt
R20	1000Ω 20%	1/2		BTS-100	Decoupling
R21	100Ω 20%	1/2		BTS-100	Decoupling
R22	33kΩ	1/2			AGC Network
R23	4.7 Meg.	1/2			AGC Network
R24	5600Ω	2			Voltage Divider
R25	1000Ω	1/2		BTS-1000	AGC Network
R26	120Ω	1/2		BTS-120	1st Video IF Amp. Cathode
R27	33kΩ	1/2			1st Video IF Amp. Screen
R28	1000Ω 20%	1/2		BTS-1000	1st Video IF Amp. Plate Decoupling
R29	82000Ω 5%	1/2			2nd Video IF Amp. Grid
R30	1000Ω 20%	1/2		BTS-1000	AGC Network

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA RCA PART No.	IRC PART No.	IDENTIFICATION CODES
R31	120Ω	1/2		BTS-120	2nd Video IF Amp. Cathode
R32	47kΩ 20%	1/2			2nd Video IF Amp. Screen
R33	12kΩ 5%	1			2nd Video IF Amp. Plate
R34	4700Ω	1		BTA-4700	2nd Video IF Amp. Decoupling
R35	470kΩ	1/2			Sound IF Amp. Grid
R36	82Ω	1/2		BTS-82	3rd Video IF Amp. Cathode
R37	33kΩ 20%	1/2			3rd Video IF Amp. Screen
R38	3900Ω 5%	1/2		BTS-3900	3rd Video IF Amp. Plate
R39	1000Ω 20%	1/2		BTS-1000	3rd Video IF Amp. Plate Decoupling
R40	1000Ω 20%	1/2		BTS-1000	4th Video IF Amp. Screen
R41	180Ω	1/2		BTS-180	4th Video IF Amp. Cathode
R42	18kΩ	1/2			AGC Network
R43	18kΩ	1/2			AGC Network
R44	8200Ω 5%	1			4th Video IF Amp. Plate
R45	1000Ω 20%	1/2		BTS-1000	4th Video IF Amp. Plate Decoupling
R46	33kΩ 20%	1/2			AGC Network
R47	56000Ω 5%	1/2		BTS-5600-5%	Video Det. Diode Load
R48	220Ω	1/2		BTS-220	Video Amp. Cathode
R49	100kΩ	1		BTA-100K	Voltage Divider
R50	220Ω	1/2		BTS-220	Video Amp. Cathode
R51	390kΩ	1/2		BTS-390K	Video Amp. Grid
R52	47000Ω 5%	1/2		BTS-4700-5%	Video Amp. Plate
R53	18kΩ	1		BTA-18K	Video Amp. Decoupling
R54	18kΩ	2		BTB-18K	Decoupling
R55	18kΩ	2		BTB-18K	Decoupling
R56	6800Ω	2		BTB-6800	Video Amp. Plate
R57	4700Ω	1		BTS-4700	Video Peaking
R58	820kΩ	1/2		BTS-820K	Picture Tube Grid
R59	390kΩ	1/2		BTS-390K	DC Rest. Load
R60	56kΩ	1/2		BTS-56K	Sync. Sep. Grid
R61	150kΩ 20%	1/2		BTS-150K	AGC Network
R62	390kΩ	1/2		BTS-390K	AGC Network
R63	47kΩ	1/2		BTS-47K	AGC Network
R64	82kΩ	1/2		BTS-82K	Voltage Divider
R65	15kΩ	2		BTB-15K	Voltage Divider
R66	47kΩ	1/2		BTS-47K	Picture Tube Cathode
R67	82Ω	1/2		BTS-82	Sound IF Amp. Cathode
R68	27kΩ	1/2		BTS-27K	Sound IF Amp. Screen
R69	1000Ω 20%	1/2		BTS-1000	Sound IF Amp. Decoupling
R70	56kΩ	1/2		BTS-56K	Voltage Divider
R71	56kΩ	1/2		BTS-56K	Limiter Screen
R72	8200Ω	1/2		BTS-8200	Limiter Decoupling
R73	100kΩ 5%	1/2		BTS-100K-5%	Disc. Diode Load
R74	100kΩ 5%	1/2		BTS-100K-5%	Disc. Diode Load
R75	5.1Ω	1/2	72067		Disc. Filament-Wire Wound
R76	22kΩ 20%	1/2		BTS-22K	De-emphasis
R77	47kΩ	1/2		BTS-47K	Tone Compensation
R78	10 Meg. 20%	1/2		BTS-10 Meg.	AF Amp. Grid
R79	330kΩ	1/2		BTS-330K	AF Amp. Plate
R80	470kΩ	1/2		BTS-470K	Audio Output Grid
R81	330Ω	1/2		BTS-330	Audio Output Cathode
R82	330Ω	1/2		BTS-330	Audio Output Cathode
R83	27kΩ	2		BTS-27K	Sync. Sep. Grid
R84	1.2 Meg.	1		BTA-1.2 Meg.	Sync. Sep. Grid
R85	12kΩ	1/2		BTS-12K	Voltage Divider
R86	2200Ω 20%	1/2		BTS-2200	Sync. Sep. Cathode
R87	33kΩ	2		BTB-33K	Sync. Sep. Plate
R88	10kΩ	1/2		BTS-10K	Voltage Divider
R89	22kΩ	1/2		BTS-22K	Integrator
R90	8200Ω	1/2		BTS-8200	Integrator
R91	8200Ω	1/2		BTS-8200	Integrator
R92	68kΩ 20%	1/2		BTS-68K	Current Limiting
R93	470kΩ	1/2		BTS-470K	Vert. Osc. Grid
R94	2.2 Meg. 20%	1/2		BTS-2.2 Meg.	Vert. Osc. Grid
R95	1.5 Meg.	1/2		BTS-1.5 Meg.	Vert. Osc. Plate
R96	2.2 Meg. 20%	1/2		BTS-2.2 Meg.	Voltage Divider
R97	56kΩ	1/2		BTS-56K	Decoupling
R98	12kΩ 5%	1/2		BTS-12K-5%	Vert. Peaking
R99	2.2 Meg.	1/2		BTS-2.2 Meg.	Vert. Output Grid
R100	470Ω 20%	1/2		BTS-470	Vert. Output Cathode
R101	68kΩ 20%	1/2		BTS-68K	Current Limiting
R102	27kΩ	1		BTA-27K	Voltage Divider
R103	39kΩ	1		BTA-39K	Voltage Divider
R104	1000Ω 20%	1/2		BTS-1000	Vert. Output Decoupling
R105	1 Meg.	1/2		BTS-1 Meg.	Acc. Anode Load
R106	270kΩ	1/2		BTS-270	Acc. Anode Load
R107	1 Meg. 20%	1/2		BTS-1 Meg.	Voltage Divider
R108	330kΩ 5%	1/2		BTS-330K-5%	Horiz. AFC Grid
R109	820kΩ	1/2		BTS-820K	Horiz. AFC Grid
R110	82kΩ	1		BTA-82K	Horiz. AFC Cathode
R111	330kΩ	1		BTA-330K	Horiz. AFC Cathode
R112	150kΩ	1/2		BTS-150K	Horiz. AFC Filter Network
R113	3900Ω	1/2		BTS-3900	Horiz. AFC Filter Network
R114	100kΩ	1		BTA-100K	Voltage Divider
R115	22kΩ	1		BTA-22K	Voltage Divider
R116	220kΩ 5%	1		BTA-220K-5%	Horiz. Osc. Grid
R117	12kΩ 5%	1/2		BTS-12K-5%	Horiz. Osc. Transformer Shunt
R118	82kΩ	1		BTA-82K	Horiz. Osc. Plate
R119	680kΩ 20%	1/2		BTS-680K	Voltage Divider
R120	470kΩ 20%	1/2		BTS-470K	Horiz. Output Grid
R121	47Ω 20%	2			Parasitic Suppressor
R122	220Ω	2		BW-2-220	Horiz. Output Cathode
R123	6800Ω	2		BTB-6800	Horiz. Output Screen
R124	2200Ω 20%	1		BTA-2200	Horiz. Linearity Coil Shunt
R125	1 Meg. 20%	1			HV Filter
R126	100kΩ 20%	1		BTA-100K	Line Filter

Note 1. Some models use a 22kΩ resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ 1.5A	140VAC .240ADC	6.3VAC @ 1.2A	6.3VAC @ 8A	75207			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	400Ω Tap @ 31Ω	0Ω	75240				Hor. Output Trans.
T3	540Ω	.8Ω	75208				Vert. Output Trans.
T4A	42Ω		75204				Hor. Deflection Coil
B	3.9Ω						Vert. Deflection Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T5A	7500Ω	4Ω	400Ω	.6Ω	75520 ②	A-8114 ①	A-3020	RO-13 ①	① Drill one new mounting hole.
B	5800Ω	4.2Ω	500Ω	.4Ω	71419 ③	A-3877	A-2930	RO-9 ①	② Used in model 2T60 only. ③ Used in model 2T51 only.

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA RCA PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	PM	4Ω	75022 ②	8T-116 ④ MOD. P8-U	8A21 ④	② Used in model 2T60 only. ③ Used in model 2T51 only. ④ Remount output transformer.
B	EM		75628 ③			
	CONE DIA.	V. C. DIA.				
SP2A	7 1/4"	3/4"	75024			
B	5 x 7					

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~V)	REPLACEMENT DATA RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.240ADC	43Ω	1.3 Henries	73154	C-2326	C-2991	TR-3300 ①	① Drill one new mounting hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA RCA PART No.	MEISSNER PART No.	NOTES
L2	Ant. Coil	.6Ω	.6Ω	73591 *		* Part of antenna matching unit. Refer misc.
L3	Ant. Coil	.6Ω	.6Ω	73591 *		Wound on 18MMF capacitor.
L4	IF Trap	.7Ω		75242 *		Wound on 18MMF capacitor.
L5	IF Trap	.7Ω				
L6	Ant. Shunt	.4Ω		75241 *		
L7	FM Trap	0Ω		75449 *		
L8	Ant. Coils	0Ω		75180		Complete with stator, rotor, C8, C9, R7, R9, R10
L9	Fil. Choke	0Ω		73477		
L10	RF Trimmer	0Ω		75183		Includes trimmer capacitor
L11	RF Coils	0Ω		75179		Complete with stator, rotor, C15, R12
L12	Mixer Grid Coils	0Ω		75178		Complete with stator, rotor, R14, R15, R16
L13	Mixer Grid Trimmer Coil	0Ω		75182		Includes trimmer capacitor
L14	Osc. Coils	0Ω		75175		Complete with stator, rotor, C20, C21
L15	Fil. Choke	0Ω				
L16	Mixer Plate Loading Coil	0Ω		75185		
L17	RF Choke	.3Ω		75202		
L18	Conv. Trans.	.3Ω	.1Ω	75181		
L19	1st Video IF	.1Ω	5Ω	74589		With trap
L20	Fil. Choke	0Ω		73477		
L21	2nd Video IF	.2Ω		74590		With trap
L22	3rd Video IF -Sound Take Off	.3Ω	.1Ω	75209		
L23	Fil. Choke	0Ω		73477		
L24	4th Video IF	.1Ω	.1Ω	74592		With trap
L25	Sound Trap	.1Ω	0Ω	71776		
L26	5th Video IF	.5Ω		75210		
L27	Peaking	3Ω		75299		36 microhenries, orange-white dots, wound on 10 Meg
L28	Peaking	5.5Ω		75253	19-1921	120 microhenries, blue-red dots
L29	Peaking	2.7Ω		71793		36 microhenries-black dot
L30	Peaking	5.5Ω		75253	19-1921	120 microhenries, blue-red dots
L31	Peaking	13Ω		75252	19-1923	500 microhenries, green-white dots
L32	4.5MC Trap	2.7Ω		75251		Wound on 47MMF capacitors, green-yellow dots
L33	Sound IF	.3Ω		75211		
L34	Disc. Trans.	.1Ω	.1Ω	75212		
L35	Horiz. Osc. Trans.	80Ω	48Ω	75213		
L36	Horiz. Lin.	30Ω		71449		

PARTS LIST AND DESCRIPTIONS (Continued)

SELENIUM RECTIFIER

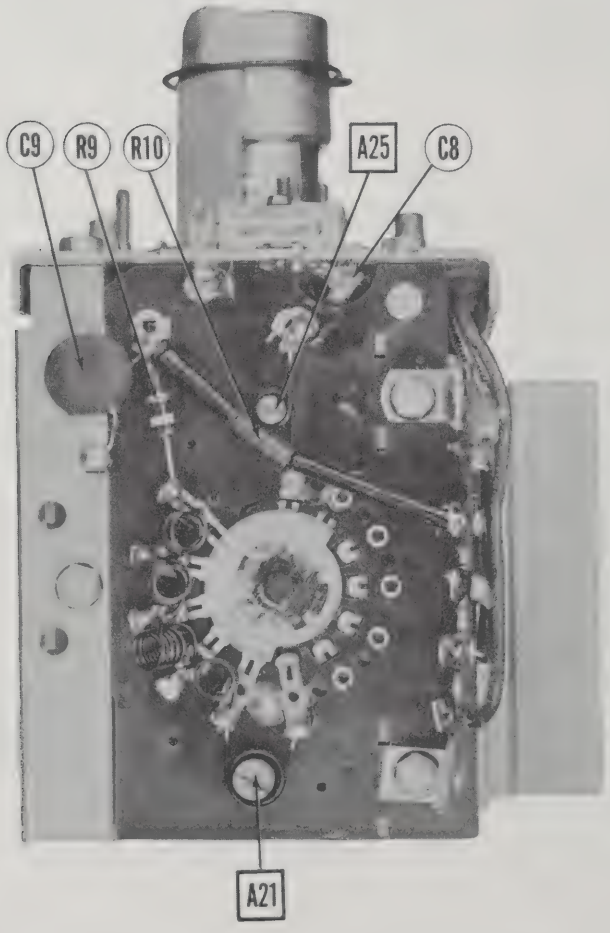
ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT	RCA PART No.	SYLVANIA PART No.	SELETRON PART No.	
M1	.240ADC	75221	NF-5	6Q2	
M2	.240ADC	75221	NF-5	6Q2	

DIAL LIGHTS

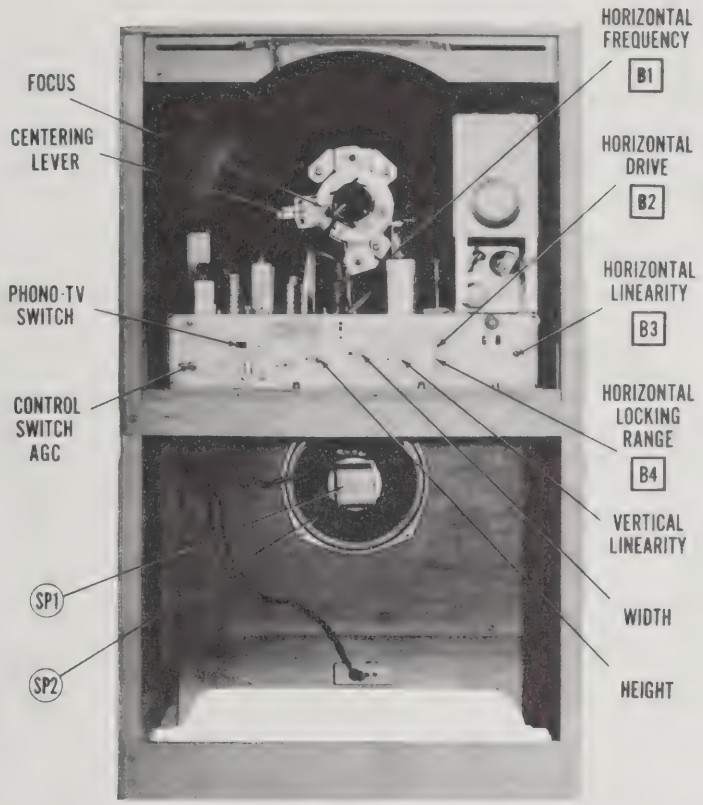
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					RCA PART No.		
M3	Bayonet	6-8	.2	White	11765		Type #51 , Model 2T60

MISCELLANEOUS

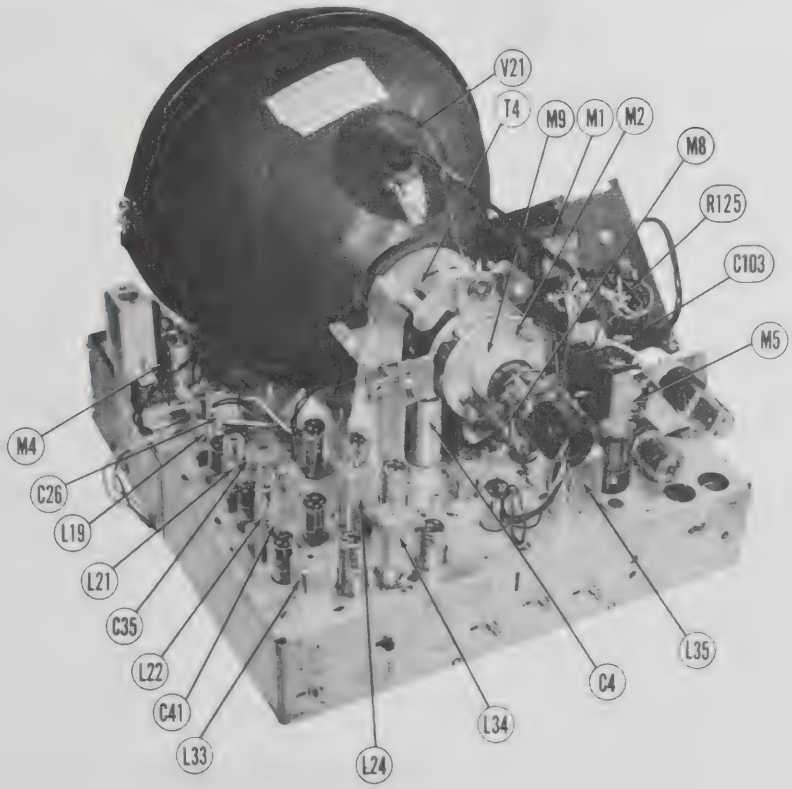
ITEM No.	PART NAME	RCA PART No.	NOTES
M4	RF Tuner		
M5	Fuse	73600	.25A 250V
M6	Switch	75629	AGC
M7	Switch	33491	TV-Phono
M8	Ion Trap	74148	
M9	Focus Magnet	75205	Includes Plate and Stud
	Safety Glass	75478	Model 2T60
	Safety Glass	75468	Model 2T51
	Knob	74960	Channel selec tor, maroon
	Knob	75462	Channel selector, beige
	Knob	74959	Fine tuning, maroon
	Knob	75461	Fine tuning, beige
	Knob	74962	Brightness, Vert. hold, maroon
	Knob	75463	Brightness, Vert. hold, beige
	Knob	74963	Contrast, Horiz. hold, maroon
	Knob	75464	Contrast, Horiz. hold, beige
	Knob	74969	Volume, maroon
	Knob	75503	Volume, beige
	Escutcheon	75499	Channel marker, dark
	Escutcheon	75501	Channel marker, light
	Antenna Matching Unit	75241	Complete with connector, L2, L3, L4, L5, L6, L7, C6, C7



RF TUNER-REAR VIEW



CABINET-REAR VIEW



CHASSIS-TOP VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Connect a short between terminals C and D of L35.

Turn the set on and tune in a TV station preferably a test pattern.

Turn the horizontal hold control fully clockwise and adjust the horizontal frequency slug (B1) until the blanking signal appears as a single vertical line in the raster.

Turn the hold control 1/4 turn counter-clockwise to sync the picture.

Adjust the horizontal drive trimmer (B2) clockwise as far as possible without crowding the right side of the picture. Adjust the width control until the picture is of proper width. Adjust the horizontal linearity slug (B3) until the picture is symmetrical from left to right. A slight readjustment of B2 may be necessary for optimum results.

Turn the hold control fully counter-clockwise and momentarily remove the signal by switching to another channel and back again.

Turn the hold control slowly clockwise and note the least number of bars present just before the picture pulls into synchronization.

Adjust the horizontal locking trimmer (B4) until 7 to 9 bars are present just before pull-in.

HORIZONTAL OSCILLATOR WAVEFORM ADJUSTMENT

Remove the short from terminals C and D of L35.

Turn the horizontal hold control fully clockwise, and adjust the waveform adjustment (B5) until the blanking signal appears in the picture as a single vertical line.

Turn the hold control counter-clockwise 1/4 turn to synchronize the picture.

Connect the low capacity probe of an oscilloscope to terminal C of L35 and chassis.

Adjust B5 until the broad and narrow peaks of the waveform are of equal height as shown in figure 7. If necessary during this adjustment turn the hold control to keep the picture in sync.

Turn the hold control to maximum counter-clockwise and momentarily remove the signal. Adjust B4 until 2 bars are present just before pull in as the hold control is turned clockwise.

Turn the horizontal hold control to maximum clockwise and adjust B1 until the blanking bar appears in the picture as a single vertical line. Turn the hold control 1/4 turn counter-clockwise to synchronize the picture.

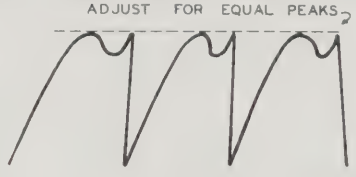


FIG. 7

AGC SWITCH ADJUSTMENT

In a strong signal area the normal position of the AGC switch is in the counter-clockwise position. If an interference of the impulse type is encountered turn the switch to the center position. In very weak signal areas turn the switch fully clockwise.

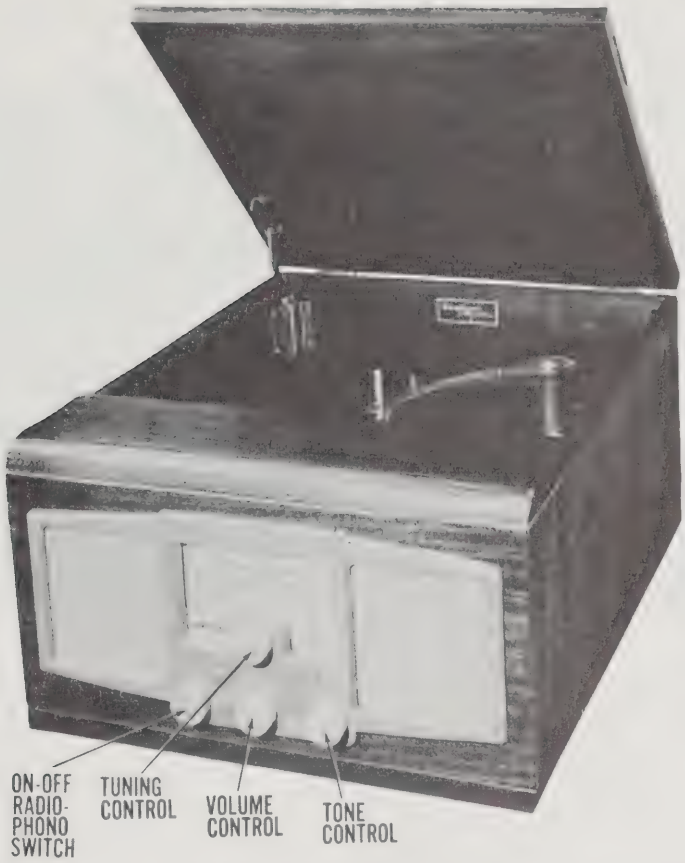
FM TRAP ADJUSTMENT

If interference is encountered from a strong FM station signal, it may be eliminated by adjusting the trap coil A38 for minimum interference in the picture.

DISASSEMBLY INSTRUCTIONS

1. Remove seven push-on type control knobs.
2. Disconnect built-in antenna.
3. Remove four wood screws, and two 1/4" hex head metal screws from rear cover. Remove rear cover.
4. Remove four 3/8" hex head bolts from bottom of chassis.
5. Disconnect speaker.
6. Remove chassis.
7. Remove four 5/16" hex nuts from speaker. Remove speaker.

SENTINEL
MODELS IU339-K, 339-K



SENTINEL
MODELS IU339-K, 339-K

SENTINEL MODEL IU339-K

TRADE NAME	Sentinel, Models IU339-K, 339-K
MANUFACTURER	Sentinel Radio Corp., 2100 W. Dempster, Evanston, Illinois
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12BE6 Converter, 12BA6 IF Amplifier , 12AT6 DET-AVC-AF, 50C5 Power Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .23 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set pointer to last line at the low frequency end of dial.
Turn the Off-Radio-Phono switch to radio position (1st position clockwise).
Use isolation transformer if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.02MFD	High side to pin 7 (Grid) of 12BE6 (V1). Low side to B-.	455KC (400 ∿ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output.	"	A6	"

RECORD CHANGER --- WEBSTER-CHICAGO MODEL 100

HOWARD W. SAMS & CO., INC. • Indianapolis Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SENTINEL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	DET. -AVC-AF	12AT6	12AT6	7BT	
V4	Power Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SENTINEL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	25E16	AFH1010D		UP5515		TVL-2435	■ Filter
B	50	150							▲ Filter
C2	.05	200	23E216	P288-05	DF-503	PTE4S5		2TM-S5	AVC Filter
C3	.05	400	23E416	P488-05	DF-503	PTE4S5		72P51	Line Isolation
C4	.05	400	23E416	P488-05	DF-503	PTE4S5		4TM-S5	Phono Isolation
C5	200	500	23E41	1468-0002	D6-201	5W5T2	GP2K-200	1FM-32	Diode RF Filter
C6	.005	400	23E406	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Tone Comp.
C7	.005	200	23E208	P688-005	D6-502	PTE6D5	811-005	6TM-D5	Audio Coupling
C8A	250		*	SI250	D6-251	5W5T25	GP2K-250	1FM-325	AF Amp. Plate Byp.
B	10000			BPD-01	DD-103	PTE6S1	811-01	36C1	Audio Coupling
C9	.02	400	23E413	P488-02	DF-203	PTE4S2	811-01	4TM-S2	Output Plate Byp.
C10	.05	400	23E416	P488-05	DF-503	PTE4S5		4TM-S5	Line Filter

* Items C8A, C8B, R6A and R6B are combined into one unit obtainable under Mfgr's Part No. 23E2023.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1 Meg.	½	28E46	Q13-136	AG-63-Z	BSK-70	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
R2A	500KΩ	½	28E41	Q13-133	AG-60-Z	BSK-60	Tone control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R2A per instructions

RESISTORS

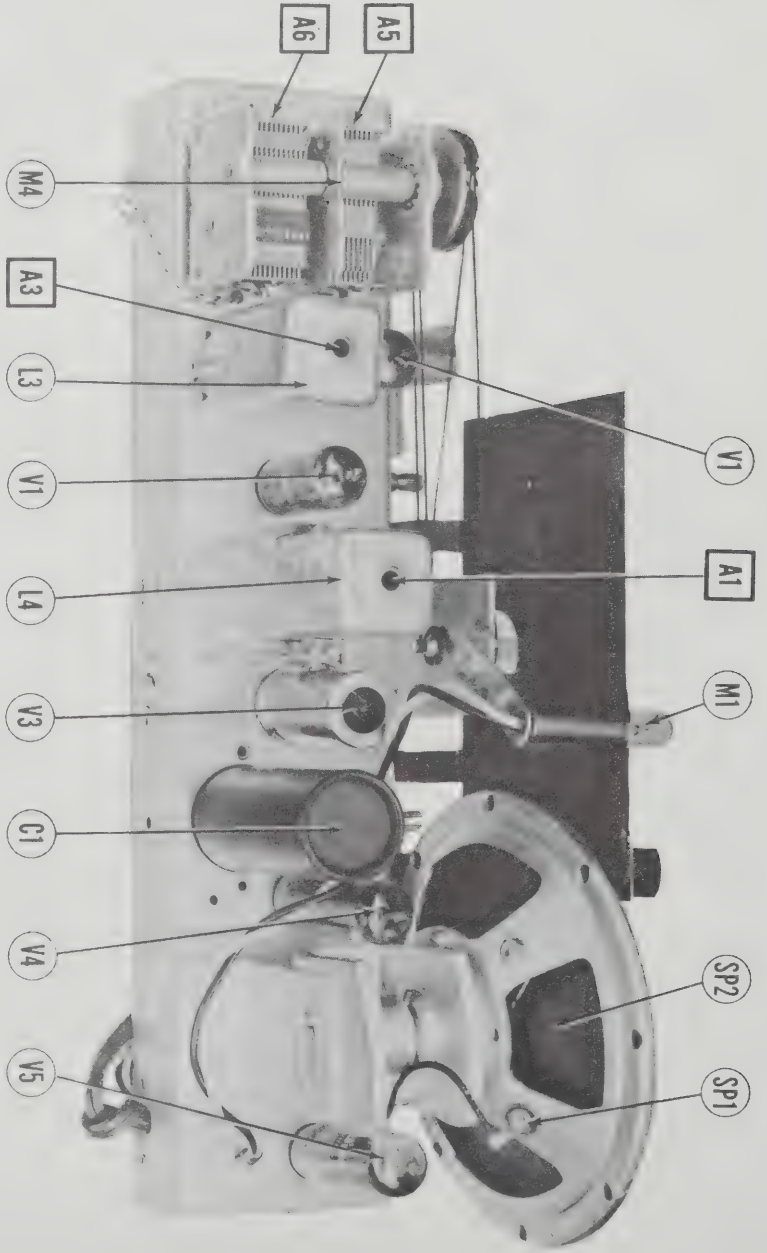
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SENTINEL PART No.	IRC PART No.	IDENTIFICATION CODES
R3	22KΩ	½	27E223	BTS-22K	Osc. Grid
R4	3.3 Meg.	½	27E335	BTS-3.3 Meg.	AVC Network
R5	3.3 Meg.	½	23E335	BTS-3.3 Meg.	AF Grid
R6A	250KΩ	½	*	BTS-250K	AF Plate
B	500KΩ	½		BTS-500K	Output Grid
R7	150Ω	½	27E151	BTS-150	Output Cathode
R8	47Ω	½	27E470-2		Surge Limiter
R9	2200Ω	1	27E222-3	BTA-2200	Filter
R10	150Ω	½	27E151	BTS-150	Pilot Light Shunt

* Items R6A, R6B, C8A and C8B are combined into one unit, obtainable under Mfgr's Part No. 23E2023.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SENTINEL PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	3500Ω	3.5Ω	225Ω	.7Ω	22E8-2		A-3025		

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA SENTINEL PART No.	JENSEN PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD	V. C. IMP.		ST-105		
SP1	PM	3.5Ω	1E33	MOD. P5-X	5A15	
	CONE DIA.	V. C. DIA.				
SP2	4 3/4"	9/16"				

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA SENTINEL PART No.	MEISSNER PART No.
L1	Loop Ant.	.2Ω	2.2Ω	64E21	
L2	Osc. Coil	1Ω	9Ω	20E397	14-1073
L3	1st IF	19Ω	19Ω	20E402	16-6666
L4	2nd IF	19Ω	19Ω	20E402	16-6667

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA SENTINEL PART No.		NOTES
M1	Bayonet	6-8	.15	Brown	40E1		Type #47

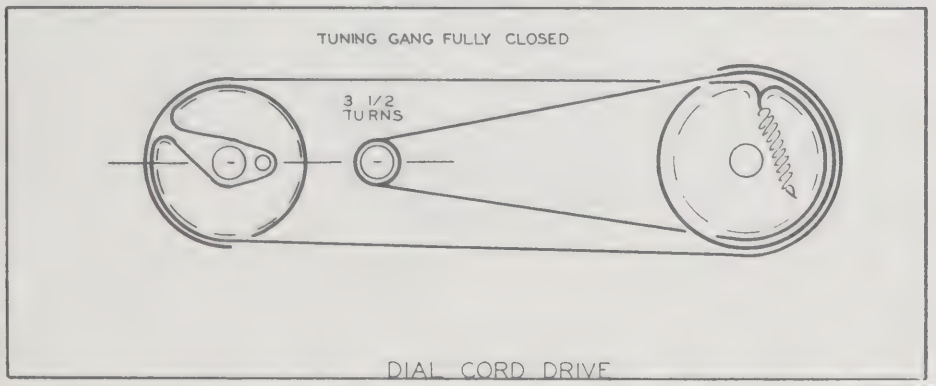
PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA SENTINEL PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	REMARKS
M2		CQ-AG-J	Q-AG	W26B	A66U	

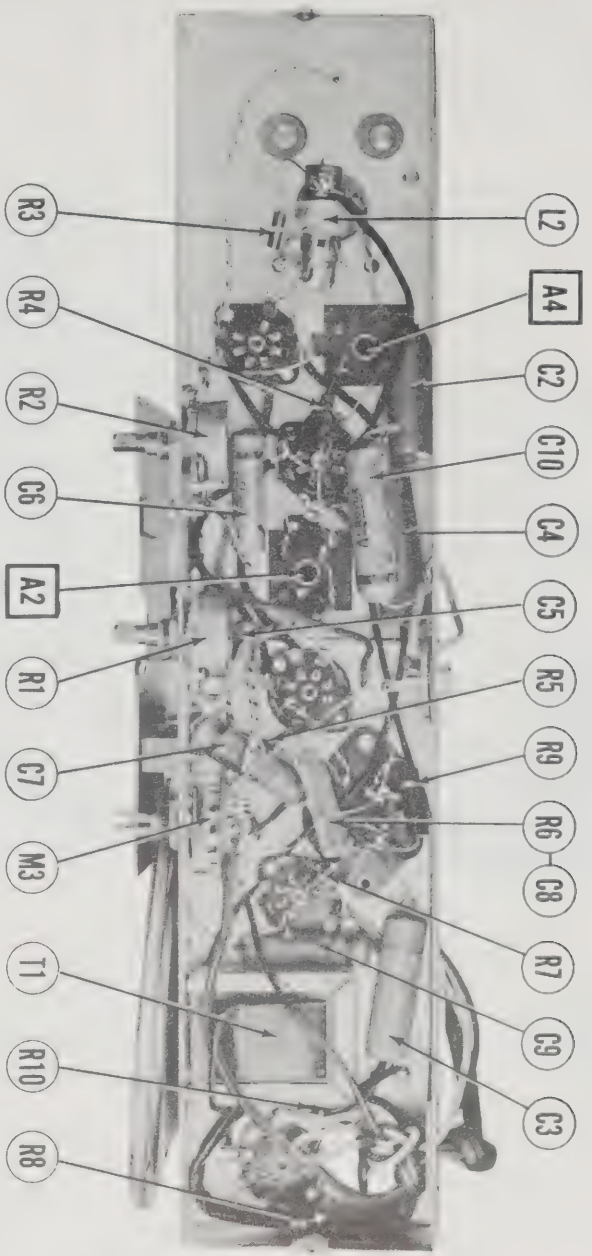
ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

MISCELLANEOUS

ITEM No.	PART NAME	SENTINEL PART No.	NOTES
M3	Switch	29E23	Off-Radio-Phono
M4	2 Gang Var. Cap.	24E47	(27-469MMF, 23-150MMF)
	Cabinet	7E246	
	Dial Scale	36E64	
	Dial Pointer	35E25-4	
	Knob	37E56	
	Knob	37E56-2	With dot



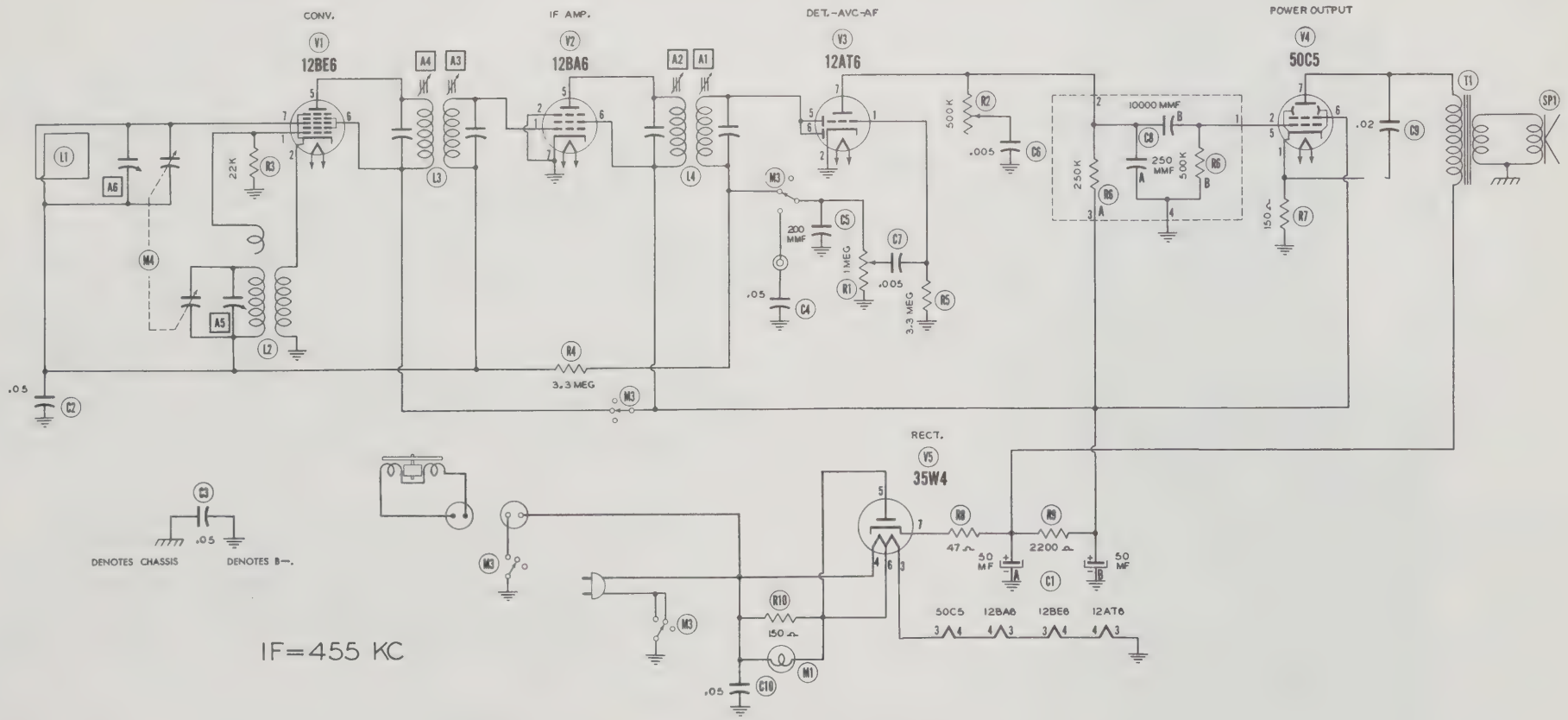
CHASSIS—BOTTOM VIEW



SET 111 FOLDER 12

SENTINEL MODELS IU339-K, 339-K

SENTINEL MODELS IU339-K, 339-K



RADIO - PHONO SWITCH IN "RADIO" POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	‡-6.7VDC	0V.	26VAC	13VAC	75VDC	75VDC	-.7VDC
V 2	12BA6	- 6VDC	0V.	26VAC	37VAC	75VDC	75VDC	0V
V 3	12AT6	- 7VDC	0V.	0V.	13VAC	-.6VDC	-.6VDC	38VDC
V 4	50C5	5VDC	0V.	85VAC	37VAC	0V.	75VDC	100VDC
V 5	35W4	108VDC	0V.	85VAC	117VAC	110VAC	110VAC	110VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1Ω	25Ω	13Ω	†3.2KΩ	†3.2KΩ	4.3 Meg.
V 2	12BA6	4.3 Meg.	0Ω	25Ω	36Ω	†3.2KΩ	†3.2KΩ	0Ω
V 3	12AT6	3.3 Meg.	0Ω	0Ω	13Ω	1 Meg.	1 Meg.	†250KΩ
V 4	50C5	150Ω	500KΩ	85Ω	36Ω	500KΩ	†3.2KΩ	†275Ω
V 5	35W4	†47Ω	Inf.	85Ω	115Ω	112Ω	112Ω	50KΩ

† MEASURED FROM PIN 7 OF V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE
MODEL 33 (Ch. 548.363)

SILVERTONE
MODEL 33 (Ch. 548.363)

SILVERTONE MODEL 33

TRADE NAME	Silvertone, Model 33 (Ch. 548.363)
SUPPLIER	Sears, Roebuck and Co., 925 So. Homan St., Chicago, Illinois
TYPE SET	AC Operated Combination Phono-Radio, Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT DET-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC — RATING .25 Amp. at 117 Volts AC
TUNING RANGE—BROADCAST	530-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning gang fully closed and set pointer in a horizontal position parallel with top of chassis.
Set PHONO-RADIO switch to RADIO position.
Use isolation transformer if available. If not connect a .1MFD capacitor in series with low side of signal generator and B-.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 8 (Grid) of 12SA7 (V1). Low side to B-.	455KC (400 ∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	Tune for max. output	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12SA7GT	12SA7GT	8AD	
V2	IF Amp.	12SK7GT	12SK7GT	8N	
V3	DET. -AVC-AF	12SQ7GT	12SQ7GT	8Q	
V4	Power Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150		PRS150/40-30-20				TVL-4420	Filter-Red
B	40	150		PRS25/25					Filter-Red
C	20	150							Filter-Yellow
D	20	25							Output Cath. -Blue
C2	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	AVC Filter
C3	5000			BPD-005	DD-502	1D5D5	811-005	29C1	Tuning Cap. Isolation
C4	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	Line Isolation
C5A	100		*811	SI100	PC-50 *	5W5T1	GP1K-100	19C11	Diode RF Filter
B	100			SI100		5W5T1	GP1K-100	19C11	Diode RF Filter
C6	10000		†813	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Audio Coupling
C7	250			SI250	D6-251	5W5T25	GP2K-250	1FM-325	AF Amp. Plate
C8	10000		‡ 814A	P488-01	D6-103	PTE4S1	811-01	4TM-S1	Audio Coupling
C9	.01	400		P488-01	D6-103	PTE4S1	811-01	4TM-S1	Tone Comp.
C10	.01	400		P488-01	D6-103	PTE4S1	811-01	4TM-S1	Output Plate §
C11	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Line Filter
C12	470	500		1468-0005	D6-471	5W5T5	GP2K-470	1FM-35	Tone Comp. §

* Items C5A, C5B and R3 are combined into one unit.
† Items C6 and R5 are combined into one unit.
‡ Items C8 and R8 are combined into one unit.
§ Not used in all models.

CONTROLS

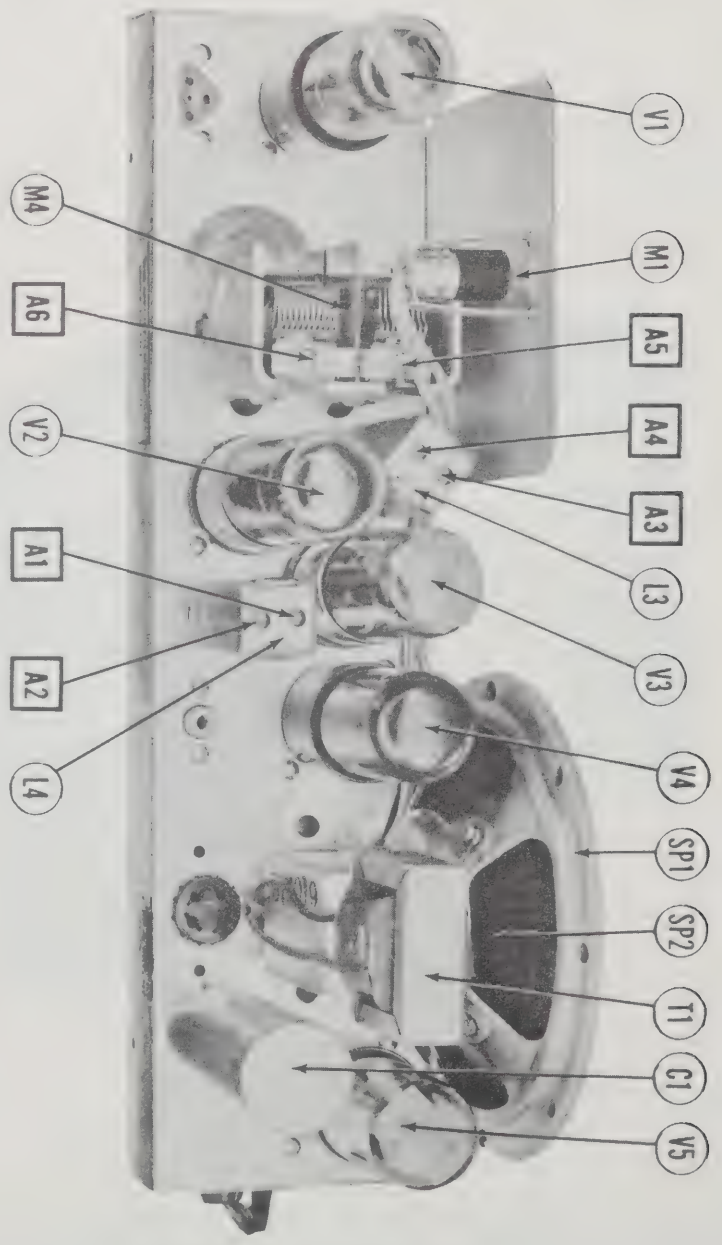
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	401	Q13-133	AG-60-Z	BSK-60-S	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions
R2A	500KΩ	½	408	Q11-133	AG-58-S	B59	Tone control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R2A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R3	22KΩ	½	517	BTS-22K	Osc. Grid
R4	2.2 Meg.	½	615	BTS-2.2 Meg.	AVC Network
R5	50KΩ	½	*	BTS-47K	Diode Filter
R6	47Ω	½	520	BW-½-47	AF Cathode
R7	5 Meg.	½	†813	BTS-4.7 Meg.	AF Grid
R8	100KΩ	½	‡814A	BTS-100K	AF Plate
R9	510KΩ	½	502	BTS-470K	Output Grid
R10	150Ω	½	505	BTS-150	Output Cathode
R11	1 Meg.	½	516	BTS-1 Meg.	Feedback
R12	2.2 Meg.	½	615	BTS-2.2 Meg.	Tone Compensation
R13	30Ω	½	534		Rect. Ballast
R14	1000Ω	1	607	BTA-1000	Filter
R15	270Ω	1	622	BTA-270	Filter-See Note 1

Note 1. Some models use a 220Ω resistor in this application.
* Items R3, C5A and C5B are combined into one unit. See C5 for part listings.
† Items R5 and C6 are combined into one unit.
‡ Items R8 and C8 are combined into one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	3000Ω	4Ω	200Ω	.5Ω	Part of SP1	A-3876 ①	A-3025 ①	RO-2 ①	① Bend mounting tabs down and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1	FIELD	V. C. IMP.	2607	ST-105 ② ④ MOD. P5-X	5A07 ② ③	② Remount output transformer. ③ Use universal mounting bracket provided. ④ Fabricate new mounting bracket.
	PM	4Ω				
	CONE DIA.	V. C. DIA.				
SP2	4 5/8"	9/16"				

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	
L1	Loop Ant.	1.7Ω		1512A		Tap a 1Ω
L2	Osc. Coil	5.9Ω				
L3	1st IF	14Ω	14Ω			
L4	2nd IF	14Ω	14Ω			

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					SILVERTONE PART No.		
M1	Bayonet	6-8	.15	Brown			Type #47

PHONO CARTRIDGE and NEEDLE

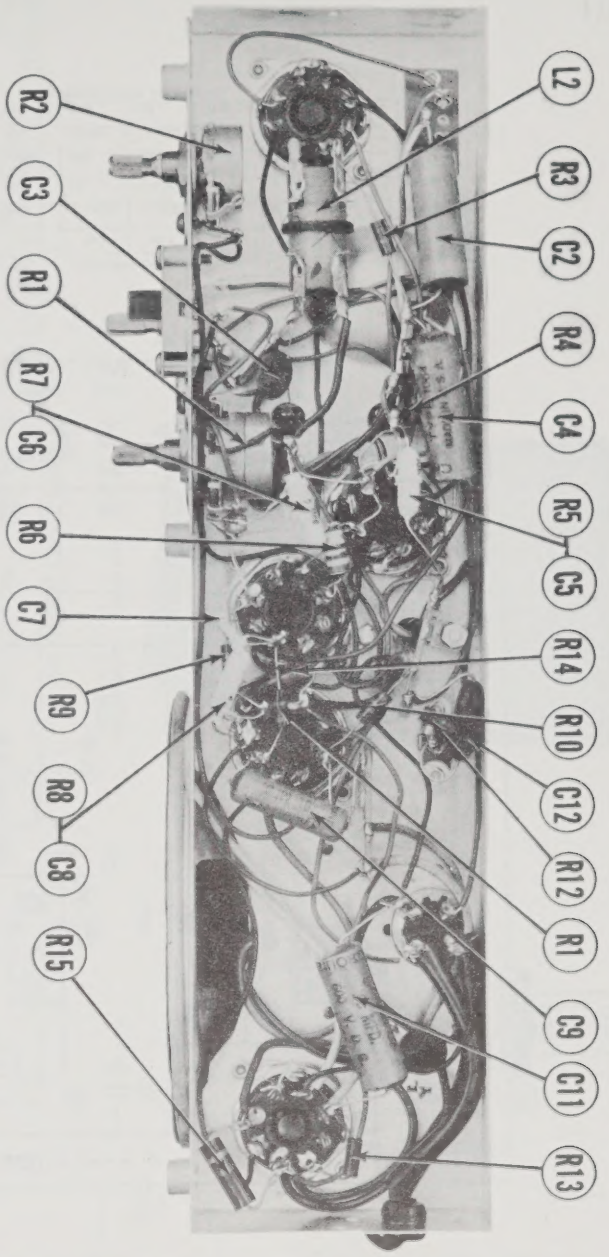
ITEM No.	REPLACEMENT DATA						REMARKS
	SILVERTONE PART No.	ASTATIC PART No.		SHURE PART No.			
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE		
M2	2530	GC-AG-M	G-AG				

ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

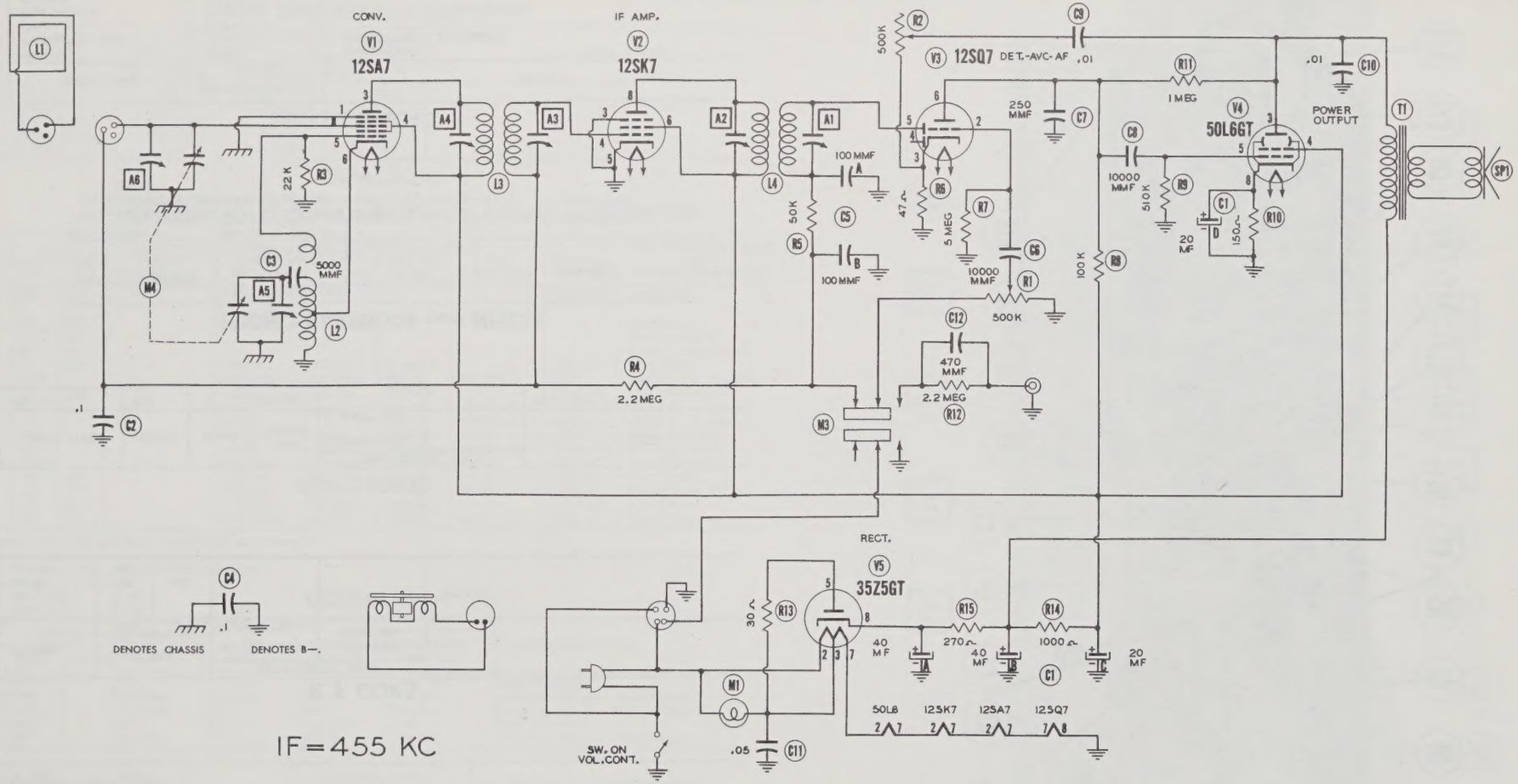
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Switch	1892A	Radio-Phono
M4	2 Gang Var. Cap.	1004A	(25-392MMF, 34-212MMF)
	Dial	1722B	
	Dial Pointer	1736A	
	Cabinet	2108A	

CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 33



RADIO - PHONO SWITCH IN "RADIO" POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	0V.	24VAC	75VDC	75VDC	8-11VDC	0V.	12VAC	-.4VDC
V 2	12SK7GT	0V.	35VAC	0V.	-.4VDC	0V.	75VDC	24VAC	95VDC
V 3	12SQ7GT	0V.	-.6VDC	0V.	0V.	-.7VDC	65VDC	12VAC	0V.
V 4	50L6GT	0V.	85VAC	85VDC	75VDC	0V.	95VDC	35VAC	5.6VDC
V 5	35Z5GT	0V.	117VAC	110VAC	0V.	105VAC	95VDC	85VAC	105VDC

‡ TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	Inf.	26Ω	†1.3KΩ	†1.3KΩ	22KΩ	1Ω	13Ω	2.7 Meg.
V 2	12SK7GT	Inf.	38Ω	0Ω	2.7 Meg.	0Ω	†1.3KΩ	26Ω	†270Ω
V 3	12SQ7GT	Inf.	5 Meg.	51Ω	Inf.	550KΩ	†100 KΩ	13Ω	0Ω
V 4	50L6GT	Inf.	90Ω	†450Ω	†1.3KΩ	510KΩ	†270Ω	38Ω	150Ω
V 5	35Z5GT	Inf.	120Ω	115Ω	Inf.	135Ω	†270Ω	90Ω	45KΩ

† MEASURED FROM PIN 8 OF V5.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

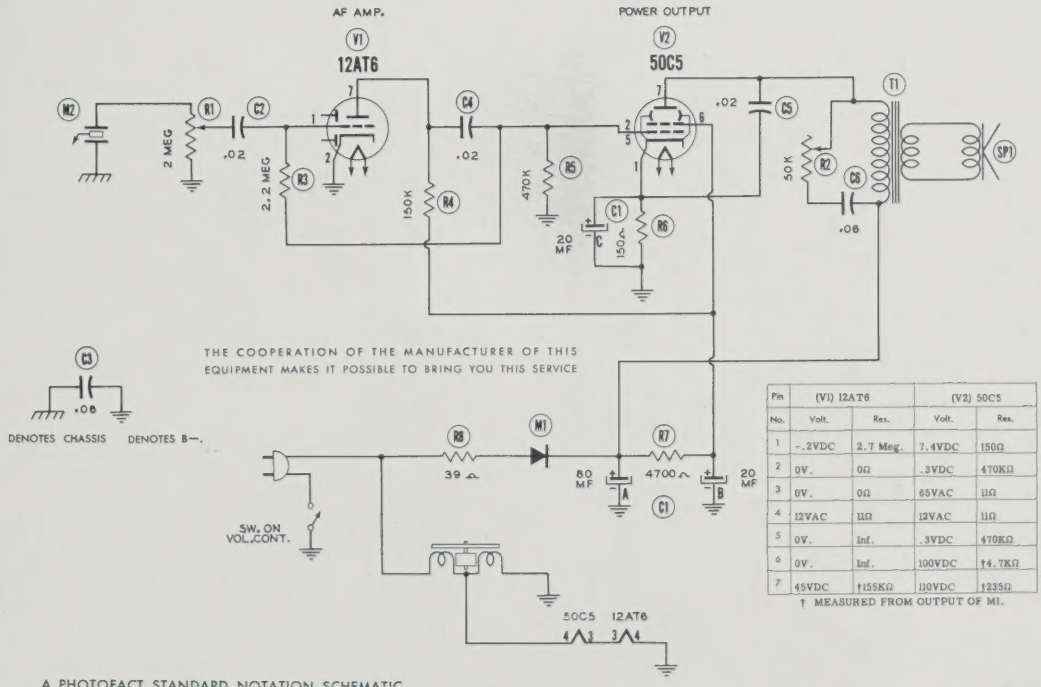
SILVERTONE
MODEL 246 (Ch. 137.906)

SILVERTONE
MODEL 246 (Ch. 137.906)

SILVERTONE
MODEL 246 (Ch. 137.906)

SILVERTONE MODEL 246

TRADE NAME	Silvertone, Model 246 (Ch. 137.906)
SUPPLIER	Sears, Roebuck and Co., 925 So. Homan St., Chicago, Illinois
TYPE SET	AC Operated Phono Player with Two Tube Amplifier
TUBES (TWO)	Types 12AT6 AF Amp., 50C5 Power Output
POWER SUPPLY	110-120 Volts AC
RATING	.38 Amp. at 117 Volts AC



Pin No.	(V1) 12AT6 Volt.	(V1) 12AT6 Res.	(V2) 50C5 Volt.	(V2) 50C5 Res.
1	-.2VDC	2.7 Meg.	7.4VDC	150Ω
2	0V.	0Ω	.3VDC	470KΩ
3	0V.	0Ω	65VAC	1Ω
4	12VAC	1Ω	12VAC	1Ω
5	0V.	Inf.	.3VDC	470KΩ
6	0V.	Inf.	100VDC	†4.7KΩ
7	45VDC	†155KΩ	110VDC	†235Ω

† MEASURED FROM OUTPUT OF M1.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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111-14

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	AF Amp.	C10507	12AT6	7BT	
V2	Power Output	C10430	50C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	150	C10427	PRS150/80-40		EDL8415C		TVA-3448	Filter-Blue
B	20	150		PRS25/25				TVA-1205	Filter-Red
C	20	25							Output Cath. -Yellow
C2	.02	200	C10497	P488-02	DF-203	PTE4S2		2TM-S2	Audio Coupling
C3	.06	200	C10502	P688-068	DF-503	PTE6S6		6TM-S6	Line Isolation
C4	.02	200	C10497	P488-02	DF-203	PTE4S2		2TM-S2	Audio Coupling
C5	.02	200	C10497	P488-02	DF-203	PTE4S2		2TM-S2	Output Plate
C6	.06	200	C10502	P688-068	DF-503	PTE6S6		6TM-S6	Tone Comp.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2 Meg.	½	C10496	Q13-139	AM-66-Z	AN-76	Volume control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWA	K-155	Attach to R1A per instructions
R2A	50KΩ	½	C10510	Q13-123	AM-46-Z	AN-32	Tone control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R2A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R3	2.2 Meg.	½	C10302	BTS-2.2 Meg.	AF Grid
R4	150KΩ	½	C10303	BTS-150K	AF Plate
R5	470KΩ	½	C10305	BTS-470K	Output Grid
R6	150Ω	½	C9897	BTS-150	Output Cathode
R7	4700Ω	½	C10429	BTS-4700	Filter
R8	39Ω	½	C10428		Surge Limiter

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2500Ω	3.2Ω	235Ω	.6Ω	C10509	A-3332	A-3025	RO-2 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS	REPLACEMENT DATA: SILVERTONE PART No.	VIKING PART No.	QUAM PART No.	INSTALLATION NOTES
	FIELD / V. C. IMP.				
SP1	PM / 3.2Ω	C10337	46J6	46A07	
	CONE DIA. / V. C. DIA.				
SP2	4" x 6" / 9/16"				

SELENIUM RECTIFIER

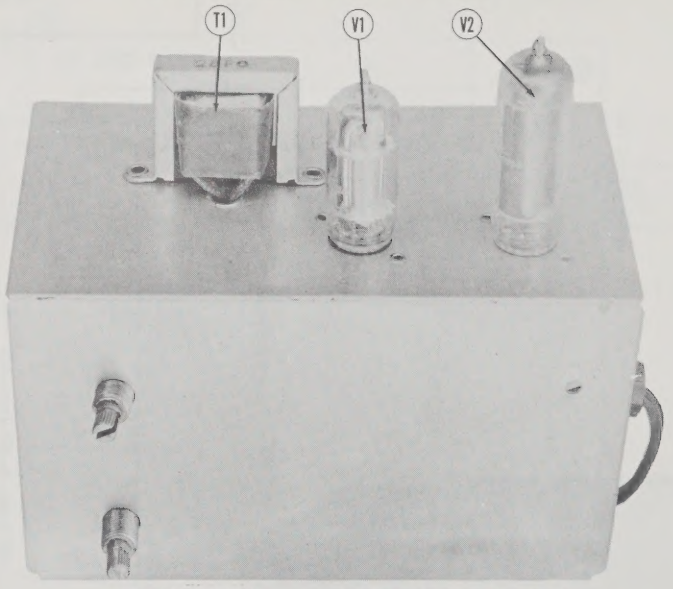
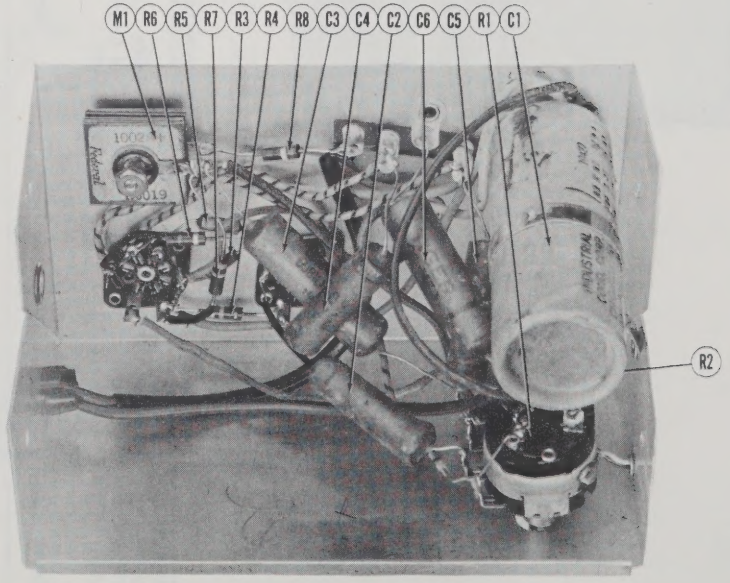
ITEM No.	RATING: CURRENT	REPLACEMENT DATA: SILVERTONE PART No.	SYLVANIA PART No.	SELETRON PART No.	NOTES
M1	048ADC	C10432	NB-5	8J1	

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	SHURE PART No.: CARTRIDGE	SHURE PART No.: NEEDLE	REMARKS
M2	C10498	GC-AG-M	G-AG			

ASTATIC AND SHURE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED.

CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW